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LIEUT.-COLONEL SIR JAMES BARR, M.D., LL.D., F.R.C.P., F.R.S.E.

I PROPOSE to deal to-day with the physics of the chest and their relation to the diseases and injuries of the thoracic organs. This is a subject equally important to the physician and the surgeon, and, it seems to me, often one of vital importance to the patient. Excellent surgery in severe chest wounds was carried out by many surgeons in casualty clearing stations, whereby many lives were saved. They quickly removed as far as practicable all foreign bodies, dead tissue, blood clots, and every possible source of sepsis; and then closed the chest wounds, thus restoring the function of the injured lung. During the operation collapse of the lung was prevented as far as possible. A moderate amount of air left in the pleural cavity does not matter much, as it soon gets absorbed when the chest is closed.

In *British Medicine in the War* there is an article on gunshot injuries of the chest, with special reference to haemothorax, which almost completely fails to recognize the physical principles which are so important in such injuries. It is only from a clear appreciation of basic principles that real advancement can take place.

In my Bradshaw lecture[1] on the pleurae, pleural effusion and its treatment, I dealt fully with the physics of the chest, and I must now refer to many of the experiments I then conducted. A good schema of the physical working of the chest is to be found in Sir Douglas Powell's work on *Diseases of the Lungs*. He aptly says:

> It would be impossible truly to comprehend the manifold incidents and conditions of asthma, emphysema, pleuritic effusion and pneumothorax without a working knowledge of those statical and dynamical conditions of respiration in health.

Within the thoracic cavity there are two pleural cavities and the pericardium, in health these are potential rather than real cavities; the blood-vascular cavity which is constantly varying in capacity and in the amount and distribution of its contents; the gullet, nerves, and lymphatic spaces; and, lastly, the aërial cavity within the lungs which in health is the only one in direct communication with the atmosphere.

INTRATHORACIC PRESSURE IN HEALTH.

The intrathoracic pressure in health is usually negative—that is, less than the atmosphere—though under varying conditions it may, and often does, become positive. In carrying out the Valsalva experiment I have often raised my intrathoracic pressure 100 mm. of mercury above that of the atmosphere. This is sufficient to shut out all blood from entering the chest; if the chest were laid freely open under such conditions the lung would bulge through the opening. After a few beats the pulse disappears in all the superficial arteries although the vessels remain full, and it is very interesting to watch through the *x*-ray screen the reduction in the size of the heart until finally it does not appear half its former size. Only those with good vital capacity can successfully carry out this experiment. Some have thought that this is a very risky experiment, lest you should stop the heart altogether, but there is not the slightest danger, as no one could keep up the pressure long enough to do so.

In order to keep up a positive pressure within the thorax while operating on the pleura, an American surgeon many years ago devised a cabinet in which he could vary the pressure. He and the patient's body were in the cabinet under negative pressure, while the patient's head was in communication with the external atmosphere. This ingenious device was too expensive and troublesome to become popular. A more simple method is to supply the patient through a closely fitting facial apparatus with air or oxygen under moderate pressure above that of the atmosphere.

The negative pressure within the thorax is due to the elasticity of the lungs, and to the slight tendency of the chest walls to recoil beyond their greatest capacity in inspiration. The intrapleural tension is equivalent to the intrathoracic, and due to the same causes. This negative pressure under normal conditions is slight, constantly varying in amount, and always sufficient to act as a respiratory pump, which not only aids in the gaseous changes within the lungs, but renders great assistance in carrying on the pulmonic circulation. The lungs, even in expiration, are in a state of elastic tension, so that during quiet respiration the respiratory pump is more or less constantly in action.

The amount of the elastic force of the lungs has been determined by connecting a mercurial manometer with the trachea in the cadaver, and then puncturing the thorax so as to allow air to enter the pleura and cause the lung to collapse. This procedure, which gives a record of only 2 to 5 mm. of mercury, does not allow for the elastic recoil of the thoracic walls, and, moreover, in the cadaver the lungs have lost a great deal of their elasticity. Donders calculated that in health the elastic pull of the lungs in the expiratory period was 7.5 mm. of mercury. After an ordinary inspiration the negative tension is increased to 9 mm. of mercury, and after the deepest possible inspiration to 30 mm. In Müller's experiment I have often raised the negative pressure within my thorax to over 80 mm. of mercury.

The intrathoracic pressure is constantly varying during the respiratory phases, and the difference in individuals is often very great, so that experiments on the dead body are not of much value except for the establishment of general principles. So unsatisfactory did I consider these experiments that in 1907, when I was writing my Bradshaw lecture, I conducted a large number of experiments on myself and healthy friends. It is needless to say that I did not carry out the experiments with mercurial manometers tied in our tracheas. Even in the cadaver the manometer has the very serious fault that with the collapse of the lung the pressure of air in the trachea is raised, which of course raises the column of mercury, but at the same time prevents further collapse of the lung.

The method I adopted can be practised by any one on himself. A little intelligent practice is required to convert the mouth, the nares, the larynx, the trachea, and the intrapulmonary cavity into one aërial space having as nearly as possible the same pressure throughout. When taking the pressure in this cavity during oral breathing the mouth is open and the shut nares connected with a manometer. When the pressure is taken during nasal breathing, one or both nostrils are open, and the tube of the manometer lies in the shut mouth. In these observations it is essential that all respiratory movement be performed by the thorax alone, and that the mouth and nares be held in absolute repose. Any sucking or other movement of the mouth or nares destroys the uniformity of the cavity; of course, there is a second line of obstruction at the glottis, and the variation in pressure must be greater beyond the obstruction than in the mouth and nares. This obstruction cannot readily be removed in the human subject, but with the avoidance of all excitement it is reduced to a minimum.

I give you the following observations made on myself, because I can vouch for their accuracy, and I think my lungs and thoracic walls are still fairly elastic. I know many who would give a better record, and many who would give a worse. The lower pressures were made with a water manometer, and the higher with a mercurial; as mercury is 13.6 heavier than water it is easy to convert the readings into water or mercury, as you prefer.

Millimetres of Water.

1. Quiet oral breathing:
   Inspiration −5 to −8; expiration + 3 to + 5
2. Deep oral breathing:
   Inspiration −24 to −34; expiration +20 to +30
3. Quiet nasal breathing, two nostrils:
   Inspiration −10 to −16; expiration + 6 to +10
4. Quiet nasal breathing, one nostril:
   Inspiration −16 to −22; expiration +12 to +16
5. Deep nasal breathing, two nostrils:
   Inspiration −40 to −60; expiration +30 to +40
6. Deep nasal breathing, one nostril:
   Inspiration −180 to −200; expiration +160 to +180

Müller's Experiment.—After deep expiration expanding the chest with the mouth and nostrils closed, −80 mm. of mercury.
Valsalva's Experiment.—After deep inspiration forcible compression of the chest with the mouth and nostrils closed, 100 mm. of mercury.

These experiments show the great variations in intrapulmonary pressure which take place, and the more active the respiratory pump the greater the variations.

All these observations on the thoracic cavity are equally applicable to the healthy pleural cavities, but textbooks seem to infer that the elasticity of the lungs and the recoil of the chest walls are constant dragging forces trying to separate the two layers of the pleura. If such dragging were the result of these forces we ought to find some evidence of its existence. As a matter of fact there is no traction but perfect equilibrium, as the elasticity of the lungs is counterbalanced by the intrapleural tension, which is equal in force and opposite in direction—the former positive and the latter negative. The elasticity of the lungs tends to separate the pleural surfaces, and the intrapleural tension, which depends on the elasticity and to a much less extent on the tendency to recoil of the chest walls, holds the surfaces together. When the lungs are stretched in inspiration the elasticity of the lungs is increased, and so also is the intrapleural negative tension by an equal amount. Sir Douglas Powell has shown:

> that in quiet inspiration there is no inertia or elastic resistance of the chest walls to be overcome, but that, on the contrary, the thoracic elasticity is a reserve force of appreciable power constantly tending to enlarge the thorax and therefore acting in favour of inspiration.

In great emphysema of both lungs the chest enlarges to its greatest possible extent and becomes barrel-shaped, consequently this elasticity is abolished. Even without enlargement of the chest a similar condition appertains in advancing years when the costal cartilages become calcified. I have seen such calcification in a young woman of 26, induced by the chest being long fixed with a spinal support or saddle.

Intrapleural Tension.

The external surface of the pleura is protected from the atmospheric pressure by the comparative rigidity of the chest walls and the tension of the diaphragm—it is like a membrane lining the inner surface of a metal ball, consequently the two surfaces of the pleura are pressed together, and both layers are pressed against the interior surface of the thoracic walls by the atmospheric pressure within the lungs.

The elasticity of the lungs and the elastic tension or recoil of the chest walls maintain a negative pressure within the pleura, or an intrapleural tension, equal in amount and opposite in sign or direction to that of the elasticity of the lungs, so long as there is no fluid in the pleura sufficient to overcome the elasticity, or as long as the pressure within the lungs, *minus* their elasticity, does not exceed the pressure of the atmosphere. When the intrapulmonary pressure exceeds that of the atmosphere, the lung elasticity remains a potential but not an active force.

If we take Donders's figures of 7.5 mm. of mercury or 102 mm. of water as equivalent to the elastic pull of the lung during the expiratory period, it would require a fluid pressure of 102 mm. of water all round the lung to abolish the negative tension.

In pleural effusion gravitation carries the liquid to the most dependent part of the sac, and as the pressure of a liquid is as its depth, the lower and posterior part of the lung collapses first, and the non-collapsed portion is pushed upwards and to the front.

On the other hand, in cases of pneumothorax the pressure is fairly equal at all points, and the pressure rarely rises so high as to cause complete collapse. When the general intrapleural tension becomes positive—that is, higher than the atmosphere—the lung must collapse. On the other hand, if the intrapulmonary pressure exceed that of the atmosphere by 102 mm. of water—a condition which exists in my chest during expiration through one nostril—then the intrapleural negative tension is abolished during expiration, and any further rise in the intrapulmonary pressure would keep the pleural surface closely glued together, so that the external layer of the pleura might be laid freely open without any risk of air entering the sac. We have seen that great intrapulmonary pressure only occurs when there is some obstruction to forcible expiration, such as using only one nostril, or in Valsalva's experiment. It therefore follows that the best way to expand a collapsed lung is to increase the intrapulmonary pressure until the elasticity of the lung has been restored, and then, and not till then, to increase the intrapleural negative tension.

Owing to these marvellous provisions in Nature the two lubricated pleural surfaces can move freely over one another, but any force which separates them must be greater than the atmospheric pressure in the lungs; during inspiration this is less than the external atmosphere, and during expiration rather more. Moreover, the warming of the air in the lungs from 57° to 98° F. would make it expand about one-twelfth of its bulk, and this would increase the pressure in the alveoli. It thus takes at least an atmosphere (about 760 mm. of mercury) to separate the two pleural surfaces; when the surfaces are separated by fluid it must have been secreted at a greater pressure than the atmosphere. Thus any traction from the elasticity of the lungs can have no effect in separating the two pleural surfaces; any such effect is transferred to the walls of the thorax, seeing that there is often a difference of pressure on the two sides of the thorax. In the intact chest you could never lower the intrapulmonary pressure sufficiently to separate the two pleural surfaces, but in Müller's experiment the intrapulmonary pressure can be lowered sufficiently to make its dragging effect readily felt on the walls of the thorax.

If the smooth surface of a sixpence be attached with a little vaseline to the bottom of a metal piston of a syringe the sixpence can be easily moved about over the flat surface of the piston; but even when the nozzle is down and the sixpence only suspended by the lubricant (the object of which is to get rid of the air between the piston and the sixpence) the piston can be drawn up to the top of the syringe with the nozzle blocked, and a large, though imperfect, vacuum made without detaching the sixpence. The elasticity of the lungs and the atmospheric pressure are Nature's method for keeping the two lubricated surfaces together and enabling them to move freely over one another, and not for separating them, as is often supposed.

Molecular Cohesion.

A very distinguished surgeon and Fellow of the Royal Society has asserted that the force holding the pleural surfaces together is molecular cohesion, and has nothing whatever to do with atmospheric pressure. It will not be difficult to show that this assertion evinces a lack of knowledge of molecular cohesion and of the force of atmospheric pressure. Fellows of the Royal Society are not as a rule more ignorant than other people, but when found tripping, as they occasionally are, their delinquencies become more apparent, because less expected. The first essential for molecular cohesion is that the molecules must be in contact, and it is impossible for such contact to take place between two surfaces separated by a thin layer of fluid, even if that layer were only a ten thousandth part of an inch in thickness. Chemists and physicists may tell us that molecules are free to move about among one another, but in solid bodies they cannot move very far, and contact is absolutely necessary for cohesion. In the case of the pleura the surfaces glide over one another very easily. The only difficulty is in the separation of the surfaces, but if there were molecular cohesion it would be much more easy to tear the membrane than to move the surfaces.

Professor Donnan once told me that the surfaces of two pieces of steel have been cut so true that when they were brought into perfect apposition a much greater force than would be accounted for by atmospheric pressure was required to separate them. This is molecular cohesion; nothing like it occurs between any surfaces in the body. If there were molecular cohesion over such a large surface as the hip-joint, the junction would be so perfect that it would be much easier to smash the shaft than move the head of the bone the hundredth part of an inch.

Surface Tension.

Another force which some have imagined to play an important part is surface tension, a force which has engaged a great deal of attention in recent years; in this connexion it proves a very insignificant force. I have made many experiments on this subject, but the following

should suffice. The surface tension of a serous effusion having a specific gravity 1025 will support about 6 grains to the square inch; a transudate of a specific gravity of 1010 will support about 3 grains to the square inch. While the normal thin serous fluid of the pleural cavity may be an excellent lubricating material, its surface tension will not support more than 2 grains to the square inch; therefore as a force in holding the two pleural surfaces together it is scarcely worth computing.

I have shown the experiment with the sixpence attached with a little vaseline to the bottom of a metal piston of a syringe; much heavier metals can be suspended, but when the influence of gravity exceeds the atmospheric pressure *plus* the surface tension in the partial vacuum the weight drops off. In the open air very heavy weights, such as 56 lb., can be suspended from a smooth bookshelf with only a thin layer of vaseline intervening. No one could imagine that there was any molecular cohesion between the metal weight and the polished bookshelf, or that the surface tension of vaseline would support 56 lb. On the other hand, the atmospheric pressure is about 15 lb. to the square inch, and the attached surface of the metal is about 36 square inches, therefore the atmosphere would support a much greater weight with the same surface. The use of the vaseline is to prevent the air entering between the metal and the board; it allows the board to be moved freely over the metal, but so long as no air enters between the surfaces when the board is raised the weight follows it.

In the intact chest no air can get between the chest wall and the external layer of the pleura, consequently the two layers of the pleura are pressed together by the atmospheric pressure within the lungs. Even in Müller's experiment there is a pressure of over 13 lb. to the square inch pressing the two layers together. In most conditions it takes more than the pressure of an atmosphere to separate them; it is therefore no wonder that they often remain glued together even in punctured wounds of the lung.

It is very easy to raise the intrapulmonary pressure above that of the atmosphere, and under such conditions there would be a tendency to bulging of the lung through the external opening rather than separation of the pleural layers.

Haemothorax.

Sir John Rose Bradford says:

> Haemothorax is the most common result of a chest wound; both pneumo-haemothorax and pneumothorax are relatively rare, and in a series of 328 cases of gunshot wounds of the chest only 8 cases of the former and 4 cases of the latter were observed.

This statement gives no indication of the relative number of cases of simple haemothorax. In dealing with infection he says:

> In a series of 450 cases observed by Bradford and Elliott infection was present in 117—that is to say, roughly, in 25 per cent.; and Captain H. Henry, who carried out the bacteriological investigation, found that lung organisms, such as the pneumococcus, *B. influenzae*, and *M. tetragenus*, were present in some 20 per cent. of the infected cases, and that in the remaining 80 per cent. streptococci, staphylococci, and anaërobic gas-forming bacilli were found.

I will now deal with the physics of haemothorax. In the vast majority of cases the blood comes from the lungs and naturally gravitates to the most dependent part of the pleural cavity; this pressure first causes collapse of the lower part of the lung. If the wound be low in the chest, the collapse of the wounded portion of the lung may quickly arrest the haemorrhage, so that the negative tension is not abolished, but even increased, on account of the collapsed lung leaving a potential or actual cavity which is filled up by the effused blood, elevation of the diaphragm, collapse of the lower part of the chest walls, and emphysematous expansion of the non-collapsed portion of the lung. The negative pressure may be so great as to draw over the mediastinum—including the heart—to the affected side. When the wound is in the upper lobe the haemorrhage is likely to continue until the intrapleural tension becomes positive, when collapse of the greater portion of the lung ensues. When the external wound closes, as it, as a rule, quickly does in cases of gunshot wounds, and the wounded lung collapses, no more blood or air can get into the pleural sac, and the air is quickly absorbed, so the negative tension is maintained or even increased. An estimate of the amount of blood effused can easily be formed by the evidence of the tension, negative or otherwise. When the diaphragm is very high and immobile, and the chest flattened in the lower part, it is readily perceived that the amount of blood is slight and can be left alone if there be no evidence of infection.

In my Bradshaw lecture (1907) I rather forestalled many of the observations on the chest wounds in the present war. I said, *inter alia*:

> With care atelectasis is easily differentiated from pleural effusion even when the dull percussion is absolute and the respiratory and vocal phenomena absent. In atelectasis of one lung the affected side is smaller than the other, the ribs are closer together and more sloping, the costal angle more acute, the diaphragm raised, the dull percussion barely reaches the middle line in front, while the sound lung passes beyond the mesial line, the heart is either not displaced or slightly pushed over by the sound lung.

Pleurisy.

In pleurisy there is no sudden arrest of the effusion as in haemothorax; it accumulates gradually, and as the pressure becomes positive collapse occurs from below upwards, but there can be no general collapse of the lung until the intrapleural tension becomes sufficiently positive to overcome the intrapulmonary pressure *minus* the elasticity of the lung. Even before there is any general positive pressure, if there be a difference of pressure in the two pleurae the heart may be pushed or drawn over to the side where the negative tension is the greatest. As the effusion increases the tension becomes more and more positive, and eventually there is not only complete collapse of the lung, but the heart and neighbouring organs get much displaced, and the diaphragm pushed down so as to depress the abdominal organs. If the effusion be withdrawn and fluid air substituted for the liquid the pressure can easily be regulated, as it then becomes equal all round the lung and not according to the depth of the liquid. If care is taken to leave a pressure in the pleura less than that of the atmosphere in the intrapulmonary air sacs, the gradual expansion of the lung and the restoration of its elasticity are encouraged. On the contrary, in haemothorax the tension rarely, if ever, becomes positive, hence there is sinking in of the chest walls and a rise in the diaphragm, which becomes fixed in its elevated position. Owing to the complete collapse of the lower lobe there is no intrapulmonary pressure to assist in the expansion of the collapsed lobe. In empyema the pressure is frequently higher than in serous effusion, and when the tension is very high there is not only complete collapse of the lung, but you may have the pulsations of the heart communicated to the liquid giving rise to a pulsating empyema.

Atelectasis.

The lung is kept expanded by the negative tension within the pleura, and the greater and more active the inspiration the greater the negative tension, but not infrequently, especially in many wasting diseases where the demand for oxygen is not great, this negative pressure may fall to a very low ebb or may disappear, especially at the bases and posterior surfaces of one or both lungs, the inspiratory movements being confined to the upper part of the thorax. In such cases partial atelectasis of one or both lungs, or almost complete atelectasis of the lung of the side on which the patient has mostly lain, is not at all uncommon. Massive collapse mostly occurs in the lower lobes, and is especially apt to occur in young flat-chested individuals with pliant chest walls.

I have seen a greater number of these cases than has fallen to the lot of most men, for the simple reason that I have been on the look-out for them for many years. They are frequently overlooked because usually the subjective chest symptoms are negative, and so the lung is often allowed to remain so long collapsed that it never completely expands, and afterwards the deficient expansion of one side of the chest is ascribed to some old pleural effusion of which the patient has no recollection. When these cases are discovered in the early stages they are frequently mistaken for pleural effusion—an error which is apt to remain uncorrected if an exploring needle be not inserted into the chest. The careful physician should avoid exploratory operation until all other methods of diagnosis have failed him. In massive collapse the signs I have before mentioned should clear up the case. I have seen cases in which, after tapping with negative results, the physician in charge had diagnosed sarcoma of the lung,

unresolved pneumonia, etc. My opinion that the conditions were simply due to atelectasis which could be removed by respiratory gymnastics was at first received with incredulity, but the subsequent improvement in the cases, and the non-fulfilment of the grave prognostications proved the correctness of my views.

The Lung Reflexes.

In the early stages the diagnosis is at once cleared up by the excitation of the lung reflexes of Albert Abrams. If you rub the affected side briskly with the hand the collapsed lobe expands, the percussion note clears, you can hear the air entering the alveoli accompanied with some dry fine crepitations. If you keep up this friction for a length of time the collapsed lobe may almost attain its former dimensions, and the edges of the enlarging lung find their way between the arch of the diaphragm and the thoracic walls. If when the lobe is expanded the chest be struck firmly several times with the ulnar side of the closed fist the lobe collapses again.

The lung reflexes are largely responsible for the contralateral collapse which frequently occurs in gunshot wounds or other injuries of the chest. By these lung reflexes also collapse can be distinguished from hypostatic congestion. In those cases respiratory gymnastics should be practised, and the patient told to change his position frequently and to lie on the sound side.

In advanced cases of mitral stenosis collapse of numerous lobules on the posterior surface of both lungs frequently occurs, the oxygenating surface being greater than that demanded by the small quantity of blood passing through the lungs. These cases usually pass on to more or less permanent collapse with brown induration of the lungs. Apart from cases associated with mitral stenosis, atelectasis, partial or complete, when early recognized is very amenable to treatment; but when long neglected permanent damage to the lung results. In such a neglected case seen ten years ago I effected considerable improvement. He has since carried on hard laborious work without further medical advice until he consulted me a few days ago. There is still considerable deformity, but his vital capacity is sufficient.

Treatment of Pleural Effusion.

Fluid in the pleura lessens and finally abolishes the intrapleural negative tension, but so long as it is not sufficient to cause collapse of the lung and displacement of other organs it is often rapidly absorbed without any special medication after the febrile stage has passed. The effusion is a natural process which, if it continue till after the inflammation has subsided, lessens the risk of pleuritic adhesions; it also keeps the more or less collapsed lung quiet, which is very desirable if there be any active tuberculosis in it. A very large proportion of cases of pleurisy are tuberculous, and the early withdrawal of the fluid causes vascular turgescence of the lung, and thus often hastens the dissemination of the tubercle bacilli, and kills the patient. Before I began the substitution of one fluid for another by the introduction of filtered air into the pleural cavity, I was much more chary of early tapping than I am at present. I can now remove the whole of the effusion, even in tuberculous cases, at an early stage with perfect impunity.

A considerable number of deaths have followed the complete withdrawal of the effusion in elderly persons with rigid chest walls. The danger in such cases lies in establishing too great a negative pressure, which leads to hyperaemia and oedema of both lungs; this can be obviated by the introduction of air. I prefer air to oxygen, as nitrogen is not quickly absorbed.

When you remove, say, three to five pints of serous fluid from a pleural sac there is a potential or actual cavity which cannot be easily filled. Such a cavity cannot exist in the human body with a surrounding atmospheric pressure of 15 lb. to the square inch. It is filled by: (*a*) the carbonic acid gas which escapes from the serous fluid as the pressure is lowered; (*b*) by the more or less expansion of the collapsed lung; (*c*) by the return of the mediastinal contents, which were pushed to one side, and the further expansion of the other lung; (*d*) by increased quantity of blood in the chest; (*e*) by elevation of the diaphragm; and (*f*) by falling in of the chest wall. All these events may not suffice to fill the cavity if the amount of fluid withdrawn has been very great and the lung so collapsed and bound down that it cannot expand. The great danger arises from the collateral congestion and oedema, not only of the expanding but also of the healthy lung.

The best way to lessen this extreme negative pressure is to substitute filtered air for the fluid withdrawn. I recommend the complete withdrawal of the effusion in all cases where tapping is considered necessary, but before any great negative pressure is established, and before the patient feels any discomfort, I stop the siphon and introduce air in about equal amount to the fluid withdrawn. I then re-establish the siphon, and complete the removal of the effusion. When all the liquid is withdrawn I inject 4 c.cm. of adrenalin solution (1 in 1,000) diluted with 8 or 10 c.cm. of sterile normal saline; and, if I think it necessary, I introduce more sterile air so as to make the total amount equal to half or three-fourths of the bulk of the fluid removed; the larger quantity of air is introduced in tuberculous cases. By this method the patient suffers no discomfort except from the thrust of the trocar, and runs no risk. I prefer the siphon to the aspirator, because the force of the suction can readily be regulated, and as the tube can only reach to a receptacle on the floor practically the suction never exceeds 1 lb. to the square inch; this force is greatly exceeded by the aspirator; and the greater the negative pressure the greater the risk of hyperaemia and oedema. When introducing the air into the pleura it may be an advantage to place a manometer on the circuit so as to obviate any risk of the production of a positive pressure in the pleura, but when the operation is intelligently carried out such refinements are scarcely necessary.

The pleura is a very vascular membrane; its blood vessels belong to the systemic system, and are innervated by the sympathetic, hence the adrenalin solution causes them to contract and lessens any further secretion. When the use of adrenalin is supplemented by the introduction of air, the negative pressure is lessened or abolished but rarely becomes so positive as to cause much collapse of the lung; as the air gets absorbed the lung gradually expands and the negative pressure is re-established. By this combined method it is easy to operate in any case, even during the febrile stage, though as a rule I prefer to let that stage pass. In no circumstances should the fluid be allowed to accumulate to such an extent as completely to collapse the lung; tapping should be performed before the patient suffers any respiratory distress. By the removal of the effusion numerous micro-organisms are often removed, and by the introduction of sterile air a light innocuous fluid is substituted for a heavy deleterious one. The history of the introduction of air into the pleural cavity, in which I took a prominent part, is recorded in my Bradshaw lecture.

Drugs.

I rather hesitate to say anything about drugs in this lecture, but, as surgeons as a rule know very little about physic and less about physics, while every fool considers himself a physician, I may venture on a few observations which may contribute to the restoration of the function of the damaged lung. There is one drug—common salt—which should, as far as possible, be eliminated from the diet, especially in cases of sero-fibrinous pleurisy, on account of its high osmotic equivalent. When there is a large quantity of effused fibrin, as occurs in pneumococcal pleurisy, decalcifying agents, such as lemons, citric acid, the citrates of ammonium, potassium, and sodium, may be used. It is, however, well to reserve their use until the acute stage of the accompanying pneumonia has passed, as the lime salts are the most important drugs in the treatment of that disease.

In order to hasten the solution and absorption of the effused fibrin there is no objection to the introduction of a small amount of trypsin into the pleural cavity. The injection of a few ounces of sterile liquid paraffin, which has a lower specific gravity but a higher surface tension than the normal lubricating fluid, lessens the liability to pleural adhesions.

When the pleurisy is practically cured you will find plenty of scope for ingenuity in trying to restore the function of the lung to its pristine vigour. For such purposes the conditions of the intrapulmonary pressure in the various phases of respiration should be studied; there are numerous respiratory exercises which can be brought into play.

EMPYEMA.

In the case of a child with elastic chest walls it is not easy to mismanage a case of empyema. A considerable number of cases get well in spite of treatment. When a surgeon has to deal with a purulent effusion in the chest, his idea is free drainage, and forthwith out comes a piece of rib and in goes a large drainage tube; he expects it to suck up the liquid from the most to perhaps the least dependent part of the cavity, reckless of whether the collapsed lung ever expands or not.

In empyema the lung is always more or less collapsed, and in any operation the object should be to avoid any further collapse and to make the lung expand so as to drive the purulent fluid out of the chest. A local anaesthetic should be used, but if, in any particular case, a general anaesthetic is deemed necessary, the anaesthesia should be very light, as pointed out by Mr. Arthur Edmunds, so as not to abolish the pleuro-laryngeal reflex, and thus the vocal cords are enabled to play their part in maintaining the pressure within the lungs.

A free incision should be made in a very dependent spot, about the eighth intercostal space, in a line with the lower angle of the scapula. If the ribs be close together it will be well to take out a long piece of one rib, and then make a very free incision into the pleura. An assistant should firmly compress the side, so as to drive the purulent matter out and allow as little air as possible to enter the pleura. A strip of gauze may be inserted into the wound to prevent it closing, but no tube should be introduced; then a large piece of sterile oiled silk should be applied over the wound to act as a valve, so as to allow the discharge to escape and no air to enter. Large aseptic dressings should be applied over the valve, and the affected side may be well strapped to prevent movement. The patient should lie on or towards the affected side, so as to lessen movement and encourage drainage; he should avoid deep inspirations, and make deep nasal expirations, so as to expand the affected lung and drive the purulent matter out of the pleural cavity. He should be instructed to inspire through the mouth and expire through the nose. He should also frequently practise the Valsalva method, or blow through a small tube. If the pus be very offensive or not draining well, the patient can be treated in a continuous saline bath and then no dressings will be required; not infrequently the surgical wound becomes infected, and then a previous afebrile temperature becomes febrile. The surgeon often ascribes this to the retention of matter in the chest, oblivious of the dry glazed condition of the wound which he inflicted. The wound is enlarged or a counter opening made, and in goes a large tube. The best treatment for such cases is to keep the patient in a warm saline bath for four or five hours daily, as long as required, during the febrile period, which is usually the afternoon.

In empyema the pus is usually fairly liquid, is neutral or may be even slightly acid in reaction, contains some peptone and a ferment which seems to have the power of digesting fibrin, and thus the lung is not likely to be irreparably collapsed or bound down by adhesions; there is, therefore, a good chance of success if the operation be adopted early and the after-treatment be intelligently carried out.

An appropriate vaccine is often very useful. Tuberculous cases are the most troublesome, and usually when the fluid becomes purulent there is a mixed infection. Cases of pyopneumothorax are best treated by drawing off the liquid and filling the cavity with sterile air or oxygen. When the empyema is loculated the surgeon may remove a piece of rib and insert a drainage tube if he choose; he cannot do much harm. Unfortunately, Estlander's operation is often necessary, partly owing to early mismanagement of the cases. There should be some effort to place the treatment of this disease on a more scientific basis than that on which it has hitherto rested.

PNEUMOTHORAX.

When the air enters the pleural cavity from the lung the exit is usually not so free as the inlet, so the intrapleural tension, both in inspiration and expiration, becomes positive; then the lung collapses, and does not get a chance of expanding again unless the perforation heals and the air becomes absorbed. In these cases, if there be much respiratory distress, part of the air should be withdrawn.

VISCERAL HERNIA INTO THE THORACIC CAVITY.

In a case of hernia of the whole stomach into the left thoracic cavity Captain Arthur Evans made an incision into the diaphragm, brought down the stomach, stitched the aperture in the diaphragm, and the patient made an uninterrupted recovery. This shows what good surgery can accomplish.

EMPHYSEMA.

In emphysema the chest becomes barrel-shaped (except in the senile type) and the costal cartilages rigid; so the chest walls assume their largest possible dimensions, the lungs lose their elasticity, the recoil of the chest walls and the intrapleural negative tension disappear. Consequently the only part of the respiratory pump which remains in action is the diaphragm, which is a very poor affair compared with the movement of the pliant chest walls; thus the vital capacity is much diminished. If the pump action be completely abolished the blood can only enter the chest under positive pressure, the veins of the neck remain full and tense even in inspiration, and the right side of the heart does not receive any respiratory assistance.

Recently I drew the attention of a medical man to the fullness of the veins of his neck and wished to know what had become of the negative pressure within his thorax. He seemed to think, though he was too polite to say, that I did not know what I was talking about, as he never felt better in his life, and the swelling must have been due to a tight collar. Of course I was glad to hear it, and if he were satisfied there was no reason why I should be otherwise, but if the veins of my neck were prominent I would quickly get rid of tight collars, and as soon as possible I would re-establish the negative pressure within my thorax, even if it should cost me a visit to the Alps.

If you wish to retain a healthy chest you must maintain a good vital capacity, for which purpose pliant chest walls are essential; you must not allow any calcification of costal cartilages to take place. In the respiratory pump action which maintains the vital capacity the movements of the chest walls are equivalent to more than double that of the diaphragm. Every one should be taught chest breathing and leave the diaphragm to look after itself; it is an adventitious aid which will come naturally into play when required. In emphysema the difficulty is not so much in getting air into the chest as in driving it out; hence an elastic band worn moderately tightly round the chest assists expiration, and gives much work on inspiration, which helps to re-establish a negative pressure within the chest. This band should not be worn when asleep.

ASTHMA.

In asthma there is a temporary emphysema of the air cells, and even violent expiratory efforts cannot expel the air through the contracted bronchi, but once the spasm is relaxed the normal function of the lungs is restored. In these cases there is always an excess of lime in the system, hence decalcifying agents should be used and the intake in the diet diminished.

BRONCHITIS.

Bronchitis is usually the forerunner of emphysema, the vital capacity diminished, and the respiratory pump thrown out of gear. A dry atmosphere, to get rid of the moisture in the lungs, is essential, alkaline treatment is necessary, while decalcifying agents are only requisite in the dry spasmodic type. When the expectoration is profuse, lime, adrenalin, and atropine are beneficial.

PNEUMONIA.

On the affected side the movements are diminished, the negative pressure is lessened and gradually becomes positive, but not to such an extent as to cause displacement of the heart and other organs. At first the loss of elasticity of the lung may be greater than that of the chest expansion, so that the intercostal spaces are depressed in inspiration. However, the affected lung may become so large as to abolish the recoil of the chest wall and the lung be marked by the pressure of the ribs.

When the lower lobe only is affected it may become so enlarged as to compress the upper lobe to half its size and depress the diaphragm. The blood is often badly oxygenated, but this is rarely, if ever, a cause of death; while, on the other hand, the greater percentage of

carbonic acid in the blood stimulates the respiratory centre and keeps up the pump action.

INFLUENZA.

Some of the most prominent features of the late epidemic of influenza, especially in those cases accompanied by bronchopneumonia, were extreme nervous prostration, loss of the knee-jerks, and a paretic condition of the chest walls, so that the patients became very livid without much respiratory distress. The best results were attained by respiratory stimulants, such as strychnine and atropine, and the lime salts.

LARYNGEAL DIPHTHERIA AND CROUP.

When there is any acute obstruction to the entrance of air to the chest the negative pressure becomes so great that the pliant chest walls are driven in, the diaphragm raised, and the lower end of the sternum caved in.

ADENOIDS.

In this case the obstruction is a slowly increasing process, which leads to defective development of the chest, high palate, and narrow throat.

WHOOPING-COUGH.

This resembles the Valsalva experiment carried out in spasmodic efforts, and when the spasm is over the long crowing inspiration to fill the expanding chest represents a modified Müller's experiment. The result is that the lower part of the chest is pulled in during the expiratory phase and driven in during inspiration; in the pliant chest walls of children we may thus get permanent deformity.

MEDIASTINITIS.

In this condition we get a modified Müller's experiment, with a diminution in the volume of the pulse at the wrist during inspiration—the so-called pulsus paradoxus. When the chest is expanding, the adherent lungs cannot fill up the vacant space in the mediastinum, hence it is filled by the blood being retained in the great veins, the right side of the heart and the lungs, and the amount passing through the left side of the heart is temporarily diminished. I dealt very fully with this subject in the BRITISH MEDICAL JOURNAL of April 20th, 1907.

REFERENCE.
[1] BRITISH MEDICAL JOURNAL, November 9th, 1907.

WAR HEADACHE AND ITS SURGICAL TREATMENT.

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IN the JOURNAL of May 4th, 1918, I published an article on Cerebral Oedema (excess cerebro-spinal fluid) the material for which was based on experience derived from the many cases of headache, severe and persistent, that came under my care when serving in India.

In some cases, influenced by the gravity of the headache and by my inability to bring about any appreciable relief in other ways, I advised operation. This procedure was followed by such immediate improvement and by such generally satisfactory late results that, although these operations were conducted on patients invalided from Mesopotamia for heat-stroke and cerebral malaria, I retained an open mind as to the benefits that might result from a more general use of decompression in the treatment of other types of war headache.

Since my return home, a year ago, some hundreds of cases suffering from head injuries have passed through my hands, and at the present time I have over 250 in my wards. A large proportion of these cases have open wounds—from slight to the most severe—and nearly every patient complains of headache and giddiness. However, my remarks in this paper apply solely to the more chronic cases of headache, all head wounds having been healed for months or years.

It is necessary, however, to recapitulate some points raised in my previous paper, for, although my remarks then applied in the main to headache of malarial and heat-stroke origin, further experience shows that they possess a far wider bearing.

With regard to those patients subjected to operation in India, all ordinary measures were carried out previous to undertaking operative measures. The first patient was in so miserable a state by reason of the severity and persistency of his headache that he eagerly accepted the chance of cure by other methods. I carried out subtemporal decompression; cerebral oedema of a marked degree was found at the operation, and the headache was practically cured within two days, and this in spite of the fact that the symptoms had persisted for many months, originating from the day of the injury. The relief was fully maintained during the remainder of his stay in India. In six cases cerebral oedema of a marked degree was found, and the diminution of intracranial pressure afforded by the operation resulted in the almost immediate relief of all headache, with no recurrence in India, and with no serious relapse since—carrying on the history of the cases for a period varying from one and a half to two years.

Two explanations were advanced to account for the excess cerebro-spinal fluid, with the following fact as a basis. Cerebro-spinal fluid is secreted continuously, and, under normal conditions, it is absorbed at the same rate, into the cerebral venous system in the main, more especially through the Pacchionian bodies into the superior longitudinal venous sinus, these bodies acting as a kind of filter for the absorption of the fluid. First, under abnormal conditions—for example, heat-stroke and malaria, in both of which states the absorptive capacity of the surface cerebral vessels might well be expected to be markedly impaired—cerebro-spinal fluid is being secreted at a normal rate without absorption in direct ratio. In consequence, it accumulates in the subarachnoid spaces, bogs the surface of the brain, and even forces its way into the adventitious subdural space. Secondly, the diseases mentioned lead to excess secretion, the absorptive capacity of the cerebral vessels remaining as usual. The fluid, therefore, collects in excess. The first explanation was the one accepted, for reasons which it is not my purpose to repeat, and the evidence supplied by the cases of war headache, as here narrated, adds confirmation to the hypothesis.

With these facts behind me, and with the great material to hand, I approached the broader question of war headache and its surgical treatment with considerable confidence.

All the cases of war headache here recounted were secondary to gunshot wounds, concussion, fractured base, etc. However, out of the maze of injuries certain facts appear.

1. The more severe headaches are associated with an intact skull (closed box) or with small defects. With large deficiencies headaches are less frequent.
2. Frontal and temporal injuries are more commonly accompanied by headache than injuries in the parietal, occipital, and cerebellar regions.
3. Wounds near the vertex, in relation to the superior longitudinal sinus, are frequently associated with a severe type of headache.
4. The presence of foreign bodies within the skull is commonly accompanied by chronic headache, more especially when the foreign body is situated in relation to the ventricles of the brain.

Origin of Headache.

In the great majority of cases the headache dates from the moment of recovery from unconsciousness, either from the injury itself or from the operation carried out for the injury. The very first thing that the patient remembers is headache, at first very severe. In many cases special note is made of that point, and in some cases lumbar puncture was carried out for its relief. Previous to transference home the pains abated somewhat, and soon after arrival reached a certain standard. It is on this standard that I gauge the diminution, chronicity, or increase of the pains.

In view of the extreme severity of headache in the Mesopotamian cases, reported in my previous paper, it is interesting to note that of the twenty additional cases now reported seven came from Eastern fronts.

Severity of Headache.

This varies greatly, from mild and inconstant attacks through every degree and grade of headache to the most severe and persistent pains. Perhaps the most common type is as follows—a "cyclic" headache. Two or three days' comparative immunity, followed, without warning, by an attack severe even at its inception. This culminates

within a few hours with more or less complete prostration, the patient retiring to bed completely bowled over. This exacerbation terminates within twenty-four hours, leaving the patient still suffering from some degree of headache, perhaps a sense of oppression only. Further improvement then takes place, bringing the patient back again to the period of comparative immunity.

In explanation of this "cyclic" headache, it would seem probable that the cerebro-spinal fluid, by reason of insufficient absorption, slowly increases in quantity, finally arriving at a certain maximum, this coinciding with the period of maximum intensity of headache. By this time the fluid leads to such increase of intracranial pressure that some relief takes place automatically, the various channels being opened up whereby some excess fluid can escape. The intracranial pressure is correspondingly relieved and the symptoms diminish proportionately.

In other instances the pains show little variation in degree, persisting both day and night without intermission; the patient is never free from some degree of headache, varying from "dragging," "weight," "tearing" sensations to a constant dull ache. To these pains, after months and even years of suffering, some men seem to become accustomed, despairing of cure, procuring temporary alleviation with aspirin, etc., and regarding the headache as a thing that must be endured. I have had patients under my care who have put up with these miseries ever since 1914.

Position of Headache.

Wherever the injury, these headaches tend to become localized to the frontal region—behind the eyes—perhaps more acute on the side injured. Often, also, reference is made to the temples. Sometimes also there is a maximum "bursting" pain over the summit of the vertex. Local tenderness over the wound must not be confused with the site of headache proper. Severe occipital headache, with stiffness of the nuchal muscles, is altogether apart from these chronic headaches; such symptoms are more suggestive of a spreading cerebritis, ventriculitis, or meningitis.

Time of Onset.

In addition to the fact that mental or bodily exertion, noises, joltings (motor bus drives), concerts, and especially cinematographs, all tend to start the headache or add to its severity, there appear to be two special times of headache development—in the early morning on awaking, and in the evening between tea and bedtime. In most cases, as stated previously, the onset is rapid, the pains soon reaching their maximum.

Association with other Symptoms.

As space is limited, and as I am dealing essentially with headache, I must confine myself to a mere enumeration of associated symptoms. The complete syndrome is seldom present. Headache may be the sole evidence of the conditions existent.

1. Slowing of the pulse-rate, with but little raising of blood pressure.
2. Marked giddiness.
3. Elevation of temperature frequent, 99° to 100°, night after night. This may persist for months on end.
4. Insomnia.
5. Slow cerebration. Listlessness, anxiety, uncertain temper, depression. Patient unable to undergo any exertion, all attempts being followed at once by headache exacerbation.
6. Tendency to exaggeration of all reflexes.
7. Nausea uncommon. Vomiting rare.
8. Slight blurring of the discs—retinal veins engorged and tortuous. Diminution of the visual fields. True papilloedema rare, unless the case is complicated by the presence of foreign bodies in the brain substance, especially when related to the ventricular spaces.
9. Bowels natural, except for some constipation. Urine normal.
10. Appetite good, except during an extra severe attack.
11. Fits, generalized, epileptiform.

Causation of the Headache.

These headaches are dependent on some general increase of intracranial pressure, and this in turn is due in the great majority of cases to excess cerebro-spinal fluid—cerebral oedema. I think that this, without question, is the correct interpretation—the oedema is very apparent at the decompression operation, and the symptoms are relieved or cured within a few hours of the drainage supplied by the decompression. In some few cases, even where a diagnosis of cerebral oedema was made, no oedema has been found—merely a tense dura mater and a brain under pressure. It is to be presumed that, in these somewhat exceptional cases, there is a condition of ventricular distension due probably to interference in the normal channels at the base of the brain, with perhaps some ventricular hypersecretion. So far as my present experience goes, there are two points in the differential diagnosis between headache due to cerebral oedema and headache dependent on ventricular distension. In the later condition true papilloedema is more likely to be present, and the patient evidences more marked apathy and somnolence—a more defined state of slow cerebration. However, operative measures are indicated in both conditions, and the results obtained by operation (decompression) are almost equally favourable.

Treatment.

This may be considered under three heads: Rest, with dietetics and drugs, lumbar puncture, and decompression. Unless the conditions are exceptionally severe, the routine course adopted occupies about three months, the patient first passing through a probationary period of rest in bed, with careful dieting and with such medicinal treatment as seems fitted to the case. The results obtained are often very disappointing, for, although the patient may keep fairly comfortable so long as he is in bed, no sooner does he get up than the old headaches recur immediately. However, during this period full opportunity is afforded for the framing of a sound opinion as to the genuine character of the symptoms complained of, together with a record of the temperature changes, blood pressure, pulse rate, ocular conditions, etc.

Even when this course is only moderately successful in its results, it is customary to discharge the patient from the army and to give him instructions as to mode of living, together with advice as to reporting back in the event of relapse, etc.

Lumbar puncture has been carried out frequently. It would be expected that excess cerebro-spinal fluid, as represented by cerebral oedema, would be capable of confirmation by means of lumbar puncture. This, however, is by no means the case. Lumbar puncture may show a fluid of considerable excess and at high pressure with a perfectly dry cortex, as revealed by subsequent decompression operation. In other cases a puncture yielding negative results may be associated with a high degree of cerebral oedema. When considered also from the point of view of headache relief, lumbar puncture is equally unreliable. Sometimes it brings about alleviation, even marked relief, but this endures for a short time only, the headache soon returning, often more severe than before. Sometimes also the effect of lumbar puncture is to produce immediate exacerbation of headache. Consequently, from both points of view, diagnosis and treatment, lumbar puncture has proved, in my hands, unreliable. I obtained the same general results in the cases treated in India.

After all, cerebral oedema is primarily a cerebral manifestation, and, if my views as to causation are correct, cerebral symptoms may become manifest previous to any real increase of fluid in the spinal canal.

Rest, dietetics, drugs, and lumbar puncture failing, is there any hope of relief for this intolerable and persistent headache? The answer to this question is that subtemporal decompression will almost certainly bring about relief or cure within forty-eight hours of the operation without in any way risking the patient's life and well-being.

I do not propose to enter into details of the operation, which will form the subject of a future paper. It suffices to urge:

1. That all other measures should be given free and fair trial, with a probationary period of about three months, unless urgency prevails.
2. That operation should be reserved for the more acute cases, and for those more severe chronic cases where the patient is rendered miserable by reason of headache and associated incapacity.
3. That the operation should be so conducted as to provide adequate decompression effect, and that the trephining should be carried out under cover of the temporal muscle. There should be such removal of bone and such dural incision as shall allow of the escape into the temporal tissues of the excess cerebro-spinal fluid, sufficing to lower adequately the intracranial pressure.

The question of surgical treatment is put before the patient, together with the statement that, so far as my personal experience goes, these more severe cases of war headache do not undergo spontaneous cure, and that the operation, besides being devoid of any serious risk to life, is almost certain to bring about alleviation or cure within twenty-four to forty-eight hours.

Warning is also given as to the "new" pains which may develop as the immediate result of the operation, and as to their gradual disappearance subsequently.

Results of Operation.

Within twenty-four to forty-eight hours or so of the operation it is customary to find that the "old" headache, however many months or even years it may have existed, has completely disappeared or else that it is of so mild a description as to be almost negligible. The immediate effect of the operation is most marked. During the next three weeks or so, in the convalescing stage, mild recurrences of the "old" headache have been observed, of short duration and readily controlled by aspirin, etc. The patient becomes bright and cheerful, full of gratitude for the relief obtained. It is quite common, however, for the patient to complain within a day or two of the operation of a "new" pain, sometimes quite severe, neuralgic in type, in the temporal region, with some stiffness in the masticatory muscles, and a "thumping" pain in the immediate vicinity of the decompression opening. These new pains are obviously associated with the operation directly, dependent on the division of the temporal muscle, interference with the nerves of the region, and the trephine opening itself. Any sudden exertion may bring on the "thumpings." It is quite unusual, however, for these "new" pains to persist for more than a few days. In the few cases in which the "new" pains have proved unusually severe there has been some trouble at the operation from bleeding, or else the patient has suffered from vomiting after the operation. In these cases, also, palpation over the decompression opening has shown a degree of tenseness which should not be present in the ordinary straightforward case. This tenseness is either due to an effusion of blood or is dependent on the free escape of cerebro-spinal fluid and a too slow absorption thereof. Within three weeks both "old" and "new" pains should have disappeared, the patient being bright and cheerful, hopeful of the future.

On following up these patients, in their after-history it has been found that, taking all in all, the late results are equally encouraging, as can be seen from the summary given below. Any real relapse is very rare, though now and again complaints are made of mild recurrences, both of the "old" and "new" pains. All patients have expressed themselves in terms of gratitude for the relief or cure obtained.

The following is a brief summary of twenty cases of subtemporal decompression carried out for the relief of headache, chronic and severe, the result of gunshot wound or other injury of the head, the headache leading to total incapacitation and rendering the sufferer utterly miserable. In the majority of cases the patient has himself requested operative measures, all other remedies having failed.

ABSTRACT OF CASE HISTORIES.

1. Gunshot wound, left temporal, August, 1916. Constant headache. Decompression two years after injury.
2. Gunshot wound, frontal, July, 1917. Constant headache. Decompression eight months after injury.
3. Gunshot wound, orbito-frontal, and "buried," October, 1917. Headaches ever since. Decompression five months after injury.
4. Gunshot wound, frontal, November, 1917. Headaches severe and persistent. Decompression three months after injury.
5. Gunshot wound, occipital, April, 1918. Headaches constant. Decompression four months after injury.
6. Gunshot wound, frontal, and hernia cerebri, June, 1918. Headaches severe. Decompression four months after injury.
7. Gunshot wound, temporo-occipital, numerous small foreign bodies in brain, November, 1917. Persistent headache. Decompression five months after injury.
8. Gunshot wound, frontal, and "blown up," November, 1917. Persistent headaches. Decompression ten months after injury.
9. Head injury in 1910, followed by headache and fits. Much worse after service in India. Decompression twelve months after going to India. Invalided home.
10. Gunshot wound, frontal, April, 1915. Headache and fits ever since. Decompression three and a quarter years after injury.
11. Gunshot wound, mastoid, in Palestine, May, 1917. Headaches incessant. Decompression seven months after injury.
12. Injury to head in 1910. Headache and fits ever since; worse after service in India. Invalided home. Decompression fourteen months after proceeding to India.
13. Injury to head in 1915. Occasional headaches at first; after service in the East, headaches continuous. Invalided home. Decompression after one to two years' service.
14. Gunshot wound, fronto-parietal, April, 1918. Never free from headaches. Decompression three weeks after injury.
15. Fractured base, August, 1917. Headaches persistent. Decompression ten months after injury.
16. Gunshot wound, orbito-frontal, August, 1917. Persistent headaches. Decompression, right and left, six and sixteen months after injury.
17. Gunshot wound, frontal, May, 1918. Headaches very severe. Decompression five months after injury.
18. Gunshot wound, parieto-occipital, July, 1918, foreign body in cortex. Headaches severe. Decompression four months after injury.
19. "Blown up," concussion, August, 1918. Headaches persistent. Decompression two months after injury.
20. Gunshot wound, frontal, October, 1918. Headaches very severe. Decompression two weeks after injury.

INFLUENZA AMONG POISON GAS WORKERS.

BY

FRANK SHUFFLEBOTHAM, M.D.

(A Report to the Medical Research Committee.)

THE general impression which has been created that workpeople employed in the various processes connected with the production of poison gases enjoy a large degree of immunity from influenza has led me to make an investigation at the various factories, filling stations, and stores where poison gases are manufactured or handled, with a view to ascertaining the prevalence of influenza and the severity of the symptoms among this class of worker, and I am much indebted to the medical officers of these factories for valuable information which they have placed at my disposal.

I will deal first with a factory situated in a large Midland town where influenza was very prevalent during the two last epidemics. At this factory workers were engaged in processes in which sulphuretted hydrogen, chloro-picrin and chlorine were involved. On the sulphuretted hydrogen and chloro-picrin plants twenty-seven workpeople were employed; during both epidemics only one man was reported as suffering from influenza, and this case was very mild. With this exception, the health record among these workers was extremely good. On the chlorine plant 142 girls were employed, working on three shifts, and out of this number only six cases of influenza arose, and all of a mild form.

The medical officer of this factory has been good enough to give me details with regard to the incidence and severity of influenza among his own private practice in the same town. Out of a panel of 1,143 insured persons, no fewer than 802 contracted influenza, of whom 42 suffered from pneumonia as a complication, and of these pneumonia cases 6 were fatal. Three of these cases were men over 60 years old, two were men aged 31 and 24 respectively, and the remaining one suffered from tuberculosis of the lung. Apart from the panel practice, the same medical officer was called in to see 177 private cases of influenza. Pneumonia supervened in 14 of these cases, and there were 4 deaths, 3 in children; the fourth case was a man aged 74. With regard to the complications of this epidemic, pneumonia was not only the most frequent but the most serious. The other complications were: rheumatism, otorrhoea, severe neuralgia, pleurisy, colitis, gastritis in various forms, and one case of melancholia.

From these figures it is abundantly clear that poison gas workers were practically immune from influenza in this district, as only 4 per cent. of this class of worker contracted influenza of a very mild type, while 68 per cent. of the medical officer's panel patients were attacked, and the various complications indicate that the epidemic among these persons was of a serious character.

The second example I shall give will be taken from the workpeople employed in a factory in Staffordshire where similar poison gases were dealt with. In this case about 200 men and women were employed, and during the two epidemics there were only two cases of influenza. One of these contracted the disease on the way from Scotland; the second was fatal owing to the man insisting on returning to work before recovery. The medical officer of this factory reports that in his private practice in the same district, out of a panel of 2,500 he had 620 patients suffering from influenza, of whom 18 contracted pneumonia, with 5 deaths. In addition, he attended at home 150 private patients, of whom 13 had pneumonia as a sequela; one of these cases was fatal. The complications of the epidemic in this district were pneumonia, pleurisy,

bronchitis, gastritis, colitis, haematemesis, bleeding from the bowel, acute and persistent vomiting, acute and persistent diarrhoea, dacryocystitis, conjunctivitis, albuminuria, and hystero-epilepsy.

In these epidemics poison gas workers show a very great degree of immunity from influenza, as only 1 per cent. were affected, while in the panel practice of the medical officer to the factory no less than 24.8 per cent. were victims during the two epidemics.

In three other centres where workpeople are engaged in chlorine processes it was found that influenza during the last epidemics was practically a negligible complaint, although, as in the previous instances, it was very prevalent in these districts among the general community. The conclusions arrived at by medical officers attached to these three factories were that not only was the disease very rare among this class of workpeople, but that when cases were contracted they were of a mild type.

Chloro-picrin workers are also found to be less susceptible to infection than the general community. In the North Midland district there are two factories, employing about 650 workpeople, where this substance was manufactured, and where filling was also carried on. Among this number only one or two cases of influenza arose in each district, and these were of a very mild type. Without exception, each person was able to return to work after being absent for eight or not longer than ten days.

Other lethal compounds were manufactured or handled in five different centres, and the information I have from these districts tends to show that workers in these compounds also are practically immune from influenza. At a large factory where upwards of 3,000 people were employed, and to which whole-time medical officers were attached and full records kept, it was found that while the general body of workpeople suffered from influenza to the extent of 50 per cent. in each epidemic, among the poison gas workers only 13 per cent. were reported as incapacitated on this account. At a second factory where similar bodies were manufactured not a single case of influenza arose. At the other three centres where these compounds were made comparatively few cases of influenza were found, and not a single case of pneumonia arose among any of this class of workpeople.

Among workpeople employed in the production of mustard gas the records show that the amount of absenteeism during the two epidemics was not increased beyond normal. The medical reports of over 1,000 workpeople indicate that in the production of mustard gas the average weekly percentage of absenteeism from all causes is about 13 for man and woman alike, and during the recent epidemics of influenza this figure remained practically stationary.

It has been found, however, that workpeople engaged in the production of phosgene gas are more prone to influenza infection than other classes of the community, although pneumonia does not arise more frequently among these workers than among other classes of patients. When bronchitis arises as a complication of influenza among phosgene workers it is invariably of a severe type, and may develop into bronchopneumonia.

The information with regard to influenza among poison gas workers has been collected from twenty different sources in different parts of the country; it all points in the same direction—that, with the exception of phosgene gas, workers engaged in the production of other poison gases have enjoyed a very high degree of immunity from influenza infection. It is agreed, on the other hand, that phosgene workers are peculiarly susceptible to influenza, and that the disease, when contracted, assumes a serious course.

AT a recent meeting of the Société de Thérapeutique, Paris, Dr. G. Rosenthal commented on Rénon and Mignot's recent communication, in which they stated that injections of saccharose had no action either on human tuberculosis or on the experimental diseases in the guinea-pig (vide BRITISH MEDICAL JOURNAL, March 15th, p. 308). This objection, he said, was only applicable to hypodermic injections, which, as already stated, possessed little value. On the other hand, a daily intravenous injection of 5 to 20 c.cm. of Lo Monaco's solution (equal parts of saccharose and water) was efficacious in states of malnutrition, and indirectly had a favourable action on tuberculosis. The improvement was usually rapid, being well marked after ten to fifteen days' treatment.

ANTIMONY IN THE TREATMENT OF AMERICAN LEISHMANIASIS OF THE SKIN.

BY

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IT is unnecessary to enter here into the history of the introduction of intravenous injections of antimony (tartar emetic) in leishmaniasis and other tropical diseases. I would refer those interested in the subject to a paper by myself published in the *Transactions* of the Society of Tropical Medicine and Hygiene, December, 1916, and to one by Jemma in the *Journal of Tropical Medicine and Hygiene*, January 1st, 1918.

Cases of American dermal leishmaniasis are not commonly seen in England, and that here recorded is of special interest because of its long duration and because no secondary buccal lesions have developed, a contingency always to be dreaded.

History of the Case.

The patient was born in Scotland, and served in the Indian army for thirty-three years (1876–1909). After leaving India he went to Portuguese West Africa for a trip; in 1909 and again in 1910 he visited Central America, travelling on the frontiers of Guatemala and British Honduras. He returned to England in July, 1910, and remained until October, 1910, when he went to Portugal. Since that date he has been in Portugal for the greater part of every year till 1917; he visited San Thome for a trip in 1912. From 1917 to the present date he has lived in London.

Previous Illnesses.

When in India he suffered from dysentery (1877–78) and from malaria in 1903. In 1880, when at Secunderabad, he had two sores on the left hand between the ring and middle fingers. They were of chronic type, and lasted for about a year, finally disappearing when he left Secunderabad. In Burma, in 1884, he had "mud sores" on the ankles. In 1889 and 1890 he was back in Secunderabad; sores on hands again. Their nature is doubtful. They disappeared without treatment. He had an attack of quartan malaria in British Honduras, 1910. He has never suffered from syphilis.

Present Illness.

When in British Honduras he was constantly travelling in the jungles and forests and was much exposed to the bites of all kinds of insects. Between April and July, 1910, he developed *Gusano del monte*—that is, an infection with the larvae of *Dermatobia cyaniventris* = (*D. noxialis*). Thirty maggots were removed from various parts of his body.

In October, 1910, when in England, he noticed a horny, oval, yellowish scale, ½ in. by ¼ in. on the pinna of the right ear. He picked it off, leaving an open sore which showed no signs of healing. In January, 1911, he suffered from influenza followed by pneumonia, and at this time the sore became larger. Mercurial ointments were then tried, but did no good. Although the Wassermann test gave negative results in 1912, he took a course of mercury and potassium iodide spread over a period of five months (during his stay in San Thome of three months and the voyages out and home), with no result, the sore continuing to perforate the ear till it formed a complete passage, when it continued to spread round the edges. In 1911, when in Portugal for the winter, the sore became much worse and the lower part of the ear became very much swollen. The condition was then diagnosed as malignant disease, rodent ulcer, and syphilis by different observers.

In May, 1913, the patient saw Professor Simpson in London. Dr. Wenyon, at the London School of Tropical Medicine, was requisitioned to make cultures from the sore for leishmanial parasites, and *Leishmania americana* appeared after a long period of incubation. Sir Ronald Ross then tried radium, but this failed to cure the condition. On the patient's return to Portugal in 1914 Dr. Pereira da Silva cauterized the lesion and some superficial ulcers around it. Professor Kopke later recommended antimony, but this treatment was not carried out. From that date (1914) till the present time the condition has remained more or less unaltered, but a portion of the ear has been gradually eaten away. In June, 1918, the part became inflamed and the sore threatened to spread again. Antimony ointment was applied locally. It did good, the sore drying up considerably. Apart from this he has never had any other antimony; the ointment was applied from July 17th to 22nd, 1918.

In August, 1918, Professor Simpson suggested that he should be given antimonium tartaratum intravenously and asked me to give the injections. For this purpose I took the patient to the London School of Tropical Medicine and gave him a course, the result of which will be seen later.

Condition on Examination.

About an inch of the pinna of the right ear was gone; the area was dry except at the top, where, and also at the lower margin, there were signs that the disease still existed and was spreading. The part was tender and red. The diseased margin was punctured, and smears and cultures made from the serum and blood withdrawn. The results of both were

negative, but owing to the facts that leishmanial bodies had been found before, and that clinically the condition was characteristic and active, the injections were proceeded with. Besides the finding of the leishmanial bodies, the diagnosis was supported by the fact that the case originated in Central America, and assumed the form characteristic of the disease in those regions (*oreja de los chicleros*). See descriptions by H. Seidelin (*Yellow Fever Bulletin*, vol. ii, No. 9, 1912), quoted by Julian Arce, Dermal Leishmaniases of Peru (*Boletin de la Sociedad Geografica de Lima*, xxxiii, 1916), and Rodriguez Arjona (*Rev. Med. de Yucatan*, vol. x, April-May, 1915), quoted in *Tropical Diseases Bulletin*, vol. vii, No. 2, 1916. No signs of any implication of the mucous membrane of the nose or mouth could be detected. The Wassermann reaction was negative.

Table showing Number and Results of Intravenous Injections of Antimonium Tartaratum.

Date.				Date.			
Aug. 12, 1918	...	...	gr. ½	Oct. 28, 1918	...	...	gr. 2
,, 15 ,,	...	...	gr. ½	,, 31 ,,	...	...	gr. 2
,, 19 ,,	...	...	gr. 1	Nov. 4 ,,	...	...	gr. 2
,, 22 ,,	...	...	gr. 1	,, 7 ,,	...	...	gr. 2
,, 26 ,,	...	...	gr. 1	,, 11 ,,	...	...	gr. 2
,, 29 ,,	...	...	gr. 1	,, 14 ,,	...	...	gr. 2
Intermission.				,, 18 ,,	...	...	gr. 2
				,, 21 ,,	...	...	gr. 2
Second Course.				,, 25 ,,	...	...	gr. 2
				,, 28 ,,	...	...	gr. 2
Oct. 3, 1918	...	...	gr. 1	Dec. 2 ,,	...	...	gr. 2
,, 7 ,,	...	...	gr. 1	,, 5 ,,	...	...	gr. 2½
,, 10 ,,	...	...	gr. 1½	,, 9 ,,	...	...	gr. 2½
,, 14 ,,	...	...	gr. 1½	,, 12 ,,	...	...	gr. 2½
,, 17 ,,	...	...	gr. 1½	,, 16 ,,	...	...	gr. 2½
,, 21 ,,	...	...	gr. 1½				
,, 24 ,,	...	...	gr. 2	Total	...	...	gr. 47

Remarks.—There was a slight rigor after the first dose on August 12th. On August 29th the ear looked better and was much drier. On October 3rd, at the commencement of the second course, the improvement was maintained; there was no sign of spread. All signs of inflammation had gone by October 14th. There was a rigor after the injection on November 4th; on the 18th the ear looked as if it were cured.

The injections were given by the late Dr. Cockin and myself. The tartar emetic was dissolved in 2 oz. of normal saline, sterilized, and run into the vein as near as possible at body temperature. The intermission in the course was due to the illness of Dr. Cockin and to my absence from London. It was not intended for any curative or other reasons. The injections were well borne, and, apart from a rigor twice, probably due to the solution being a little cold, there were no untoward symptoms.

The effect upon the lesion was striking; a very distinct improvement was noticeable on August 29th after the fifth injection. For all practical purposes the ear was cured on November 18th, but to make certain the injections were carried on for another month, to December 16th; a total of 47 grains in all having then been given.

Since that date I have examined the condition from time to time and no signs of any recrudescence have appeared. On January 2nd, 1919, the ear looked perfectly well, the margins were fibrosed, he could stand the part being pinched, and could sleep on it, a thing he could not do before. I saw him again on February 17th, when the part was still well; on March 6th it was evidently quite cured. All the mucous membranes are healthy.

ANTIMONY TARTRATE IN BILHARZIOSIS AND TACHYCARDIA.

BY

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I HAVE been told that, in some cases which have undergone courses of treatment by the intravenous injection of antimony tartrate, "tachycardia" was noticed; this suggested that antimony tartrate for bilharziosis was a dangerous remedy because it produced cardiac symptoms.

Sweeping general statements such as this are often made by people who have not given the remedy a real trial. They are inclined to attribute any unexpected symptom which occurs in the course of treatment and after to the action of the drug. Many mistakes are made in medicine by such hasty conclusions.

I have always advised that antimony tartrate should be given in both bilharziosis and leishmaniasis with circumspection, and with due appreciation of the fact that it is a powerful agent for good or evil, according to the skill and acumen of the operator; but nevertheless it may be administered safely by the circumspect* doctor in his out-patient clinic with sure effect in the ordinary uncomplicated case of bilharziosis.

Tachycardia, or rapid heart (accelerated beat), is quite common amongst Egyptians, as is well known to doctors who do insurance work, and I have no doubt that some of the cases treated with antimony tartrate have tachycardia. But this symptom is not due altogether to the remedy.

The patients referred to above were Egyptian army soldiers. I am told that tachycardia is a common cause for the rejection of recruits for the Egyptian army, so possibly the tachycardia had nothing to do with the antimonium tartrate; indeed, it was first noticed some weeks after they had been discharged from hospital, and other possible causes of rapid heart had not, in this particular instance, been investigated. Many soldiers are excessive cigarette smokers; some of them have hypertrophy of the left ventricle, with a certain amount of heart strain, owing to military exercises. Here are two explanations which might account for the tachycardia, and they should be, in my opinion, excluded before antimony is blamed. Now I come to a third possible cause. The Egyptian soldier is—though big and muscular—sallow-skinned and anaemic, and this condition is due to the parasites he harbours in his intestines and elsewhere. *Schistosomum haematobium* is only one of the most common of them. *Ankylostoma duodenale* is equally common. *Amoeba dysenteriae*, *Taenia nana* and other tapeworms, *Ascaris lumbricoides*, threadworms, *Heterophyes heterophyes*, *Lamblia intestinalis* and other flagellates, bacteria, and micro-organisms—any, some, or all together may be present in the bowel of the Egyptian—and more than these. The Egyptian soldier is no exception; he is infested with intestinal parasites.

Until intestinal parasites are looked for systematically and as a routine practice in hospitals, the list of obscure fevers, undiagnosed diseases, puzzling anaemias, mysterious enlargements of organs, such as Egyptian splenomegaly, will remain as long as ever, and will be a stumbling-block to medical men who write about them, label them with local names, or call them after their own or somebody else's name. "Simple fevers," "continued" or otherwise, are, in my opinion, frequently due to intestinal parasites—to intestinal sepsis in other words.

The bearing of these remarks on the treatment of bilharziosis by the intravenous injection of antimony tartrate is that symptoms such as tachycardia arising in the course of treatment by the drug may be due not to antimony tartrate at all, or at most only secondary to it; they may be due to a totally different cause—to other parasites for instance—although at the same time bilharzia may be present. The faeces should always be examined in hospital cases for parasites whilst antimony treatment is on its trial, and in private practice also if circumstances render it desirable. It should be borne in mind that in Egypt the intestine is infested with parasites, and it is best to get rid of these before commencing the treatment of bilharzia by antimony tartrate.

Mr. Newlove, pathological assistant at the Khartoum Civil Hospital, has often found in the faeces of Egyptians literally hundreds of *Taenia nana*, the small tapeworm which is so common an inhabitant of the Egyptian intestine. Thymol is no good, nor eucalyptus, but *Filix mas*, given on an empty intestine, will nearly always settle it. It may be that in order to cure an Egyptian of all his parasites, a series of courses of treatment is necessary—emetine for *Amoeba histolytica;* thymol for ankylostomes; *Filix mas* for *Taenia nana* and other tapeworms; then antimony tartrate for bilharziosis; and, at intervals, laxatives (white mixture), enemas, intestinal antiseptics such as bismuth for the micro-organisms, and lavage for lamblia (flagellate) and rectal parasites.

The faeces should be examined and the usual methods used to rid him of his parasites other than bilharzia, but there should be no abuse of the antimony treatment until those sources of trouble have been investigated in cases of bilharziosis.

Incidentally I may emphasize the necessity of the routine examination of the faeces in hospitals in tropical

*Circumspect = cautious and attentive.

countries. However irksome and unpleasant, such examinations are absolutely necessary for the diagnosis and treatment of tropical diseases.

A helminthologist should be part of the establishment of every hospital in the tropics, and he should be there to assist the doctors to carry out their own examinations. Few doctors know enough about the examination of faeces by microscope to make their knowledge of any practical value; how can they, since they never practise it? I would go so far as to say that a doctor who cannot himself intelligently examine faeces and translate into practical values what he sees should not be doing medical work in the tropics. A whole volume of medicine remains unknown to him. He is groping in the dark.

A NOTE ON THE VARIETY AND LATENCY OF ORGANISMS ON MISSILES IN THE TISSUES.

BY

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IT is well known that organisms may remain in certain cavities and tissues of the body. Perhaps the best recognized examples of this persistence are the presence of the enteric bacillus in the gall bladder and the staphylococcus in the bones, months or years after the initial infection has died down. A similar condition has frequently been noted in war wounds, both of the bones and soft tissues; after varying periods of quiescence a "flare up" occurs and acute symptoms again supervene. This recrudescence of activity has also been noted to occur with foreign bodies lying apparently quiescent in the tissues.

It seemed that useful information on this subject might be gained by systematic examination of missiles removed from the tissues. To achieve this, missiles apparently sterile, or at least giving no clinical indication of infection, were sent for bacteriological examination. The missiles were removed with the usual surgical precautions and were dropped into a sterile tube. In some cases they were shelled out of the fibrous tissue capsule in which they lodged, in others the foreign body was removed in the capsule, which was removed before culture. The missiles were extracted for varying reasons, either because they were subject to pressure or caused pressure on nerves, or interfered with movement. Forty-four specimens were sent for examination; nearly 50 per cent. were sterile.

Varieties of Organisms Present.

Number of examinations	44
Number sterile	21=50%
Number giving cultures	23=50%
Varieties of organisms:	
Staphylococcus	10%
Streptococcus (never in pure culture)	2%
Bacillus perfringens	1%
Tetanus bacilli	2%
Putrefactive bacilli	6%
Leptothrix	1%
Number of bullets (sterile)	4
,, ,, (with organisms)	11
Shell fragments (sterile)	16
,, ,, (with organisms)	11

Time of Latency.

Staphylococcus	3-4.5 months
Staphylococcus and putrefactive bacillus	7 ,,
Leptothrix	1 month
Gram-positive bacilli	3-15 months
Bacillus perfringens	7 ,,
Staphylococcus and diphtheroid bacilius	30 ,,
Streptococcus pyogenes and tetanus bacillus	6 ,,

Of twenty-three missiles from which cultures were obtained, the staphylococcus was present in ten cases. Putrefactive bacilli, in six cases, were next in the order of frequency. In two cases the tetanus bacillus or organisms of that type were found. The analysis shows that shell fragments, contrary to what might be expected, are more often sterile than bullets. The length of time the missile remained in the tissues varied from one to thirty months. This examination has shown that the *Bacillus perfringens* may survive a period of seven months. In this case the bullet was removed from the tibia, where it was lying without causing any apparent lesion in the surrounding cancellous tissue, as visible from an *x*-ray plate. After removal no ill effects followed, and the wound healed by first intention. In a second case a fragment of shell was removed from the forearm; streptococci and the tetanus bacillus were found. The wound suppurated, and immediately on receipt of the bacteriological findings antitetanic serum was administered; no symptoms presented themselves.

From a surgical point of view the following conclusions may be drawn:

1. That most pyogenic organisms can persist in the tissues for periods up to at least thirty months.
2. That they may at any time give rise to inflammation, and that this is possible in at least 50 per cent. of cases.
3. That prophylactic measures before removal might be useful.
4. That if possible the missile be removed complete in its fibrous tissue capsule.
5. That if such be impossible, careful disinfection of the cavity be carried out.

We are indebted to Brevet Colonel T. Gowans, R.A.M.C.(T.), for permission to publish this paper.

INUNCTION OF CREOSOTE IN PNEUMONIA AND INFLUENZA.

BY

JOHN E. B. WELLS, M.R.C.S., L.R.C.P.,
MAJOR R.A.M.C.(T.).

I WAS led to try the axillary inunction of creosote in pneumonia and in influenza and some allied conditions by several circumstances. My father, the late J. R. Wells, F.R.C.S., used creosote in his prescription for coughs and colds with success. Sir Leonard Rogers, in 1895, described in the BRITISH MEDICAL JOURNAL the use of an axillary inunction of creosote in cases of malarial pyrexia. On referring to a standard textbook of physiology I found it stated that the inunction of creosote produced sweating and lowered the temperature, but was not used for that purpose. In 1898 I used the axillary inunction of creosote in a severe case of pneumonia. Within half an hour the patient sweated, and the temperature fell from 104° to below 100°; uninterrupted recovery followed. Since then I have made frequent use of this method with almost unvarying success; the results have been too constant to admit of the change in the patient's condition being merely a coincidence with the crisis occurring at the time of the administration of the treatment.

The method of administration is simple. For adults, 10 minims of pure creosote are gently rubbed into the right axilla with the finger. If necessary, which is very rarely the case, a second dose may be given, this time in the left axilla for fear of blistering. The patient must be dressed in woollen or flannel and placed between blankets so as to avoid a chill after the sweating. Only slight discomfort attends the treatment; a slight burning of the skin, which passes off in a day or two without vesication, is the only disagreeable effect. For children I have diluted the creosote with soap liniment, reducing the proportion of creosote according to the age of the patients. For infants, in place of the axillary inunction, I have at times substituted rubbing the back and front of the chest with a liniment containing creosote.

Practically all cases of influenza under my care have been treated by rest in bed (most of them a soldier's bed—that is, on the ground), plenty of fresh air, and the administration of creosote by the mouth. Half a minim of creosote shaken up with half an ounce of water is the simple mixture—the addition of half a minim of oil of peppermint makes it more palatable, but it is not very unpalatable without it. Very few cases treated in this way develop pneumonia. When signs of pneumonia developed the axillary inunction of creosote was nearly always followed by its abortion, or it was so modified that the patient recovered. When the pyrexia of influenza has gone, quinine or strychnine or both may be necessary.

Several cases of meningitis due to infection by *Micrococcus catarrhalis*, and one by meningococcus, recovered

after axillary inunction. I believe further trial of this remedy would show good results in cases of these infections.

I believe creosote to be particularly detrimental to the pneumococcus, the *Micrococcus catarrhalis*, and the influenza germ (whatever it is finally decided to be), and that creosote administered by axillary inunction enters the blood stream through the lymphatics, and is taken direct to the lung tissues by the pulmonary circulation, possibly taking a short cut into the blood stream by the lymphatic duct. Its diaphoretic action helps to relieve the hyperaemia of the lung tissues, and thereby removes the nidus for the pneumococcus which might be formed by an exudate; its antiseptic action is brought to bear directly on any germs that may have gained access to the air spaces of the lungs.

The action of creosote when administered by the mouth is, I believe, mainly that of a local antiseptic and sedative to the fauces, but its action is also felt by the upper air passages. Whatever its method of action, I can say that the methods of administration I have described have been successful in the vast majority of cases in my own hands, and will, I believe, prove equally so in the hands of others who may try them.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

APPARENT CURE OF A CASE OF TWO RODENT ULCERS IN THE SAME PATIENT.*

ON April 15th, 1918, Mrs. G., aged 57, was sent to me by Dr. Napier with two rodent ulcers. One was situated on the cheek below the centre of the right eye, the other was about ¾ inch from the first, and involved the outer portion of the right lower lid to its extreme edge. There was a history of about ten years during which these lesions had been slowly progressing, and at the time I saw the patient the diagnosis was quite beyond doubt, the lesions presenting the rolled edges of characteristic appearance, with ulcerated bases, typical of rodent ulcers of considerable standing. Following my usual routine I gave this patient a course of therapeutic *x* rays, concentrating them on to the ulcers, and protecting the surrounding skin with sheet lead. There was a cessation of the active ulceration and a general improvement of the lesions under this treatment. At the appropriate stage I followed up the *x*-ray treatment with an application of solid carbon dioxide snow, accompanied with considerable pressure, to each ulcer separately. A very brisk reaction ensued, so much swelling occurring that the patient was unable to see out of the eye on the affected side. This gradually went down and a violent inflammatory reaction supervened, which took three to four weeks to subside. The patient then went away and I did not see her until about a month ago, when some difficulty might have been encountered in locating the sites of the ulcers that formerly existed. A thin, supple scar took the place once occupied by the growths, which appeared to be cured. I cannot venture to say that recurrence may not take place, but experience teaches that if a rodent ulcer that has not been treated by other methods, or insufficiently treated by the means I mention, is subjected to the combined influence of therapeutic *x* rays and solid carbon dioxide snow, recurrence is rare. After previous treatments, however, a satisfactory result is more difficult to obtain.

In the early days of *x* rays, some seventeen years ago, I had a good opportunity in London of testing the action of therapeutic *x* rays alone upon rodent ulcers, and my experience was that improvement might be obtained up to a point short of a complete cure, but that they invariably got worse again and progressively became more intractable. The solid carbon dioxide treatment, however, supplied just that additional therapeutic measure that was necessary, and it is now possible to treat this disease in its earlier phases with a prospect of very good results.

L. ERASMUS ELLIS, M.D.,
Late Assistant, *X*-Ray Department, St. George's Hospital.

* Being a case shown at the meeting of the Witwatersrand Branch of the British Medical Association at Johannesburg, South Africa, on December 19th, 1918.

Reviews.

EQUILIBRIUM AND VERTIGO.

ALL who are concerned with diseases involving the labyrinth and the central tracts in connexion with it will find Dr. ISAAC H. JONES'S book on *Equilibrium and Vertigo*[1] of great service. The methods of testing for lesions are described in great detail, and the conclusions to be drawn from the results as to the nature and situation of such lesions, whether in the receptors themselves or in their central connexions, are discussed and clearly explained. The illustrative cases analysed by Dr. Fisher serve a further instructive purpose.

The work is copiously provided with excellent photographs, some of them stereoscopic. The latter, given separately as duplicates, will be useful in obtaining a better comprehension of the anatomy of the parts shown. There are numerous valuable diagrams of the tracts in the central nervous system which convey impulses from the labyrinth and bring into relation the various centres which take part in the complex and widespread reactions that result from stimulation or paralysis of the different parts of the mechanism.

The normal anatomy and physiology of the labyrinth are well described. It is interesting to note that the distinction between the static sense of position, obtained from the utricle and saccule, and that of sudden movement, obtained from the semicircular canals, is pointed out. The functions of the nerve centres and tracts, although their anatomy is given in great detail, receive comparatively little attention. No doubt the difficulties are great, but even hypothetical suggestions would be welcome. The description of the functions of the cerebellum is not quite up to date. The fundamental work of Dr. Gordon Holmes was probably not accessible to the author. Improvements in the Bárány turning chair, which plays so large a part in the various tests, are described. In the use of this chair for testing the vertical canals it would seem more appropriate to arrange it, if possible, so that movements could be made also in a vertical plane with the patient's head in normal relation to his body. When the neck is bent in order to bring the vertical canals into the horizontal position for the purpose of the test, it must not be forgotten that the stimulation of proprioceptors of the muscles and other parts of the neck plays a large part in reactions to movements of the head, as shown particularly by Magnus and De Kleijn. A remark may be made with respect to the "caloric" test of Bárány. It would have been useful if some further explanation of the way in which the semicircular canals are stimulated by the cold douche in the auditory meatus were given.

The first part of the book describes how study of the labyrinth is of importance to the general practitioner, the neurologist, the surgeon, the ophthalmologist, and the otologist, as well as in relation to the testing of aviators. It is also shown that sea-sickness is due to movements of the endolymph. As regards the testing of aviators, it may be pointed out here that experience has indicated that the labyrinth does not play so preponderant a part in the appreciation of changes in direction of movement as might be supposed. It appears that differences of pressure on the skin, in the various situations in contact with the seat of the aeroplane, are of great importance.

The second part is devoted to the anatomy, physiology, and pathology of the labyrinth and its central connexions. The method of making systematic records of tests, as used by the author, is deserving of general consideration.

The way in which the book is got up is excellent, almost luxurious. Whether it might not have a wider circle of readers if somewhat more condensed is perhaps a matter of opinion, but it may be said to be indispensable to those who have to devote attention to the questions discussed. Although, of course, affections of the auditory apparatus are frequently associated with those of the labyrinth, they do not, strictly speaking, belong to the subject matter of a work dealing with the latter.

W. M. B.

[1] *Equilibrium and Vertigo.* By Isaac H. Jones, M.D. With an Analysis of Pathologic Cases by Lewis Fisher, M.D. London and Philadelphia: J. B. Lippincott Co. 1918. (Med. 8vo, pp. xv + 444; 130 figures. 21s. net.)

MANUALS FOR X-RAY WORKERS.

THE second edition of CHRISTIE'S *Manual of X-Ray Technic*[2] follows the same lines as the first. A few illustrations have been added, and a description of the Coolidge tube; the chapter on gastro-intestinal examination has been rewritten, that on diseases of bone made more comprehensive, and a description of the technique of *x*-ray therapy embodied. The author adopts the American terminology throughout, using the terms "röntgenology," "röntgenogram," "röntgen dermatitis," and so on. This cumbersome and irrational terminology, absent from the first edition, cannot be looked upon as an improvement, and the coinage of such hybrid words is to be deprecated. As is usual in manuals of this type, the first part—which constitutes more than one-third of the whole—is devoted to physics, instrumentation, the *x*-ray tube and its management, and the photographic procedures. After a chapter on the use of the screen, stereoscopic radiography, and the localization of foreign bodies, the author deals with *x*-ray diagnostic work in a series of chapters in each one of which his intention is to outline the radiographic technique and the results which may be looked for in making the examination of special parts or organs. Naturally in a small book of this kind everything has to be compressed into very little space, but this can be overdone, and when, as is the case, method and differential diagnosis of disorders of the urinary system are compressed into five pages of letterpress, little more is done than merely to indicate the *x*-ray possibilities. Not enough care has been used in making the choice of illustrations, and we venture to suggest that if dental radiography were carried out in the manner shown by Fig. 24, with no fixation of the patient, the results would be both blurred and distorted. In a book which is intended to be a guide to beginners it is essential that the greatest care should be taken to make sure that the description of technique should be strictly accurate. The purely radiographic illustrations are practically limited to those of the gastro-intestinal tract, and these are far from being up to the standard of modern work, and do not therefore set to the beginner the ideal at which he should aim. Apart from these criticisms the book appears to fulfil its purpose.

The second edition of PRINCE'S book on *Roentgen Technic (Diagnostic)*,[3] except for a few additions and corrections, is practically a reprint of the first. The author's design has been to supply a small volume particularly for general practitioners who have installed their own *x*-ray plant and who are using an interrupterless transformer. It should be noted that work with the ordinary induction coil is not dealt with at all. An outstanding feature is Chapter V, illustrating by means of photographs the exact positions of tube and patient for the making of radiographs of all the different parts of the body. These illustrations are good and demonstrate the matter of position very vividly. The same chapter also states in tabular form the essential details for each examination, including the spark gap, milliampèrage, and time of exposure suitable for each radiograph. Perhaps too little stress has been laid upon the method of radiography in the upright position, and it is unusual, as is described, to make examinations of the thorax and of the oesophagus with the patient lying down. There is an illustration and description of an apparatus for serial radiography which enables sixteen separate views of the pyloric end of the stomach to be made on a 14 by 17 plate, and the photographic part of *x*-ray work in general is well described.

ITALY IN THE WAR.

MR. G. M. TREVELYAN is a living representative of the long line of British gentlemen and scholars who from the sixteenth century onwards have drawn inspiration from the scholars, the artists, and the political thinkers of Italy. No one therefore could have been better prepared to be the interpreter to us of Italy's effort in the war, now ended or suspended, and in writing *Scenes from Italy's War*[4] he has been able to draw upon his experiences when in command of a unit of British Red Cross ambulances carrying sick and wounded from the Italian advanced dressing stations.

Italy came into the war on May 24th, 1915, and after many turns of good and evil fortune brought her chief enemy, Austria, to sue for an armistice on November 2nd, 1918. How great the effort made by Italy is shown by the fact that, according to a recent calculation, she mobilized 15.1 per cent. of her total population, and lost 1.32 per cent. in killed and missing. Great Britain, excluding the Dominions, mobilized 12.6 per cent. of the population and lost 1.5 per cent. in killed and missing. France mobilized 20.4 of her population and lost 3.37 per cent. in killed and missing. The United States mobilized 4.1 per cent. of the population and lost 0.13 per cent. in killed and missing.

The ambulance unit Mr. Trevelyan commanded was formed by him in August, 1915, with the assistance of Mr. Geoffrey Young, poet and Alpine climber, and Mr. P. J. Baker, a Cambridge athlete, both of whom had had experience in Flanders. The unit was financed and administered in London by the British Committee in Aid of Italian Wounded, but served under the British Red Cross as the first Italian unit of that society. A convoy of twenty-six cars drove across France, entered Italy on the evening of August 29th, and worked in and for the Italian armies to the end. It began service with the 6th Italian Army Corps in the zone of Cormons and Gorizia. It was based on the Villa Trento, in this region, but for the operations on the mountains about Gorizia had its main advanced station at Quisca. One of the first Italian misfortunes was an outbreak of cholera in November, 1915; of its severity, and the way in which it was controlled and the disease finally altogether prevented, an account has been given by Sir Filippo de Filippi, K.C.I.E., to the Royal Society of Medicine. It was conquered with the help of the engineers, who achieved many wonders in establishing water supplies, in road making, and in carrying aërial railways to mountain fastnesses no path could reach. In the handling of the sick the British Red Cross unit had its large share, and also in succouring, on June 29th, 1916, the sufferers from the first gas attack the Italians experienced. For two years and more the field hospital at Villa Trento, under Dr. Brock of Rome, formed part of the unit; among those who served in that unit was Sir Alexander Ogston. To him, to Dr. Brock, and to Dr. W. E. Thompson, Mr. Trevelyan pays graceful compliments. It grew eventually to a field hospital of 180 beds, with a nursing staff of a score of British sisters and V.A.D.'s. At first the Italian authorities objected to women nurses near the front, and it was only by the personal exertions of the Duchess of Aosta that their position was established. Working in association on the Italian front in 1916–17 was the radiographic unit of Countess Helena Gleichen and Mrs. Nina Hollings, of which so graphic an account was given a few months ago in *Blackwood's Magazine*. When the Italians captured Gorizia Italian field hospitals were set up in the town, although it was commanded by the enemy artillery, and the Red Cross unit established itself in the northern outskirts. The unit was, in fact, often venturesome, and suffered accordingly. Some of its members were killed, and several, including Mr. Geoffrey Young, lost a limb. In the Bainsizza offensive, which kept us all breathless in August, 1917, the unit pushed far forward over shell-swept roads, and accomplished much admirable work, carrying many patients to the Italian Red Cross advanced surgical station, Città de Milano, under the direction of Professor Baldo Rossi.

The chapters on Caporetto and the retreat (October, 1917), and on the rally in the following month, the high Alpine warfare of the spring, and the battle on the Piave in June, 1918, contain a sympathetic study of the causes of the collapse of the north-eastern part of the Italian line in 1917. The so-called phalanx strategy of the bull's charge brought the German generals some spectacular successes. The advance to the Marne in 1914, the overrunning of Serbia, and the defeat of the British Fifth Army, which brought the Germans so close to Amiens in March, 1918, may help us to understand what happened in Italy. In 1914 there was no failure of leaders or men, and in March, 1918, the failure seems to have been in leadership and preparation. Mr. Trevelyan analyses acutely the causes

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[2] *A Manual of X-ray Technic.* By Major A. C. Christie, U.S. Army. Second edition. Philadelphia and London: J. B. Lippincott Co. 1918. (Med. 8vo, pp. x + 152; 48 figures. 12s. 6d. net.)

[3] *Roentgen Technic (Diagnostic).* By Norman C. Prince, M.D. Second edition. Henry Kimpton. 1918. (Med. 8vo, pp. 142; 71 figures.)

[4] *Scenes from Italy's War.* By G. M. Trevelyan. London: T. C. and E. C. Jack, Limited. 1919. (Medium 8vo, pp. xvi + 240; frontispiece and 12 maps. 10s. 6d.)

of Caporetto, and says that, apart from some want of foresight of the leaders, the cause was enemy propaganda, working upon the special temperament and conditions of parts of the Italian forces. The war was decreed by the towns; the inhabitants of the rural districts did not understand its objects, and nobody seems to have taken any pains to enlighten them. The peasant soldiers were homesick and ready to listen to the agitators, who told them they were fools to fight for the townsmen and the capitalists. Mr. Trevelyan is not only sympathetic, but reserved; occasionally, however, he lets himself go. He writes:

> Suddenly, as by a flash of lightning, men and women in Turin and Florence, and in the remotest villages of north and south, saw what they had done by their murmurings, their cryings for peace when there was no peace, their sympathy with deserters, their discouraging letters to the front. Even in clerical circles in Rome fashionable ladies admitted "the thing had gone too far." The over-practical pacifists of Caporetto, instead of being in favour with the nation whom they had striven to release from the obligations of further self-defence, were everywhere cursed as traitors.

One of the ways in which Italy was aroused was the propaganda of the mutilated. A few wounded officers in hospitals formed themselves into a committee, and were joined by many privates and officers who had lost eyes and limbs.

> In one industrial village in the Milanese, the mayor and population refused the missionaries a hearing; but the paralysed Lieutenant Paulucci, held up on a table by his soldier friend, began to speak, and in an hour had converted them all, and drove off amid a frantic ovation. But the most effective speaker was said to be a blind private.

The ambulance unit in the retreat had to abandon stores and lost half its cars, but got away all its nurses and men, besides saving all the British sick and wounded from General Hamilton's batteries. Mr. Trevelyan is chary of praise, but he says:

> Not a man or woman in the retreat, whether British army or British Red Cross, but rose to the height of the occasion. Ours was not a grumbling unit, as English people go, but it was the only week in the war when no one grumbled about anything.

On this note of praise and on the note of final victory in the epilogue we may take grateful leave of a book which once taken up will not easily be put down. A set of excellent sketch maps in the text makes it easy to follow the story of the military operations.

NOTES ON BOOKS.

WE have read with enjoyment Dr. BERKART'S well written and judicious essay on the *Treatment of Gout*.[5] Without adding anything especially new to the discussion of an endless topic, he invests it with much common sense and clinical wisdom. In his view gout is not a specific form of disease primarily and essentially due to errors of diet, but a complex process brought about by a congenital and often inherited abnormality of development. Since all gouty persons are not addicted to dietetic excess, it is vain, he argues, to raise high hopes based on the assumption that a simple life and moderation in eating and drinking—useful as these are—will altogether prevent gout. He is caustic on the subject of dietetic prohibitions, while recognizing that a suitable diet here, as in all other chronic affections, is one of the most valuable elements in treatment. Each case, he says, presents its own problem, which must be solved in accordance with existing circumstances and upon rational principles. Two more quotations will serve to show the spirit of Dr. Berkart's teaching: "A diagnosis of gout should not invariably be the signal of interfering with the patient's habit of living unless it is clearly unsuitable." "The object of a rational diet for the gouty is best attained if the patients are not nervously apprehensive whether the necessary articles are digestible or not." He discusses medicinal agents from the same critical standpoint, and finds most of them wanting. Dr. Norman Moore has written of John Mirfield, the fourteenth century physician, that, "like a large part of the public of our day, he was satisfied as to the value of a remedy when patients could be found who said they were better after employing it." This attitude of mind is, we fear, not confined to the lay public. To those of our profession who are at all that way inclined Dr. Berkart's little treatise should prove a useful corrective.

[5] *The Treatment of Gout.* By J. B. Berkart, M.D. London: H. Milford. Oxford University Press. 1919. (Pp. 21, price 1s. 6d. net.)

SMALL-POX AND VACCINATION.

A REPLY TO DR. MCVAIL.

BY

C. KILLICK MILLARD, M.D., D.Sc.,

MEDICAL OFFICER OF HEALTH FOR LEICESTER.

THERE has been so little small-pox in this country in recent years that many medical men take but little interest in it, especially those of the younger generation, of whom not a few have never even seen a case. This fact makes the Milroy Lectures on "Half a Century of Small-pox and Vaccination," by Dr. J. C. McVail, one of our greatest living authorities, all the more welcome. There are certain points, however, raised by Dr. McVail, more especially where he refers to Leicester's experience and the question whether infant vaccination is still necessary, which are of such great and far-reaching importance that I beg leave to be allowed to deal with them.

In his first lecture Dr. McVail gave some very striking figures showing the truly remarkable reduction which has taken place in the mortality from small-pox. Thus, in successive decades the deaths have been:

1867–76	58,614
1877–86	18,026
1887–96	4,892
1897–1906	4,763
1907–16	139

Dr. McVail sums up as follows:

> During the last half-century there has been . . . a great diminution in the fatality and in the infectivity and the prevalence of small-pox. This diminution has progressed at an increasing rate of speed. In the latter part of the half-century . . . the country has shown an unparalleled freedom from the disease. . . .

I rather gather that Dr. McVail is coming to think it probable that small-pox, following the precedent of certain other diseases, is dying out so far as this country is concerned, and with that view I entirely concur.

I note with interest that Dr. McVail does not suggest that this is due to the practice of infant vaccination, and, in view of the fact that infant vaccination is being more and more neglected, such a thesis would now be very difficult to sustain. Yet in Dr. McVail's classical work, *Vaccination Vindicated*, published in 1887, he made use of the following table, taken from the Registrar-General, showing the small-pox mortality per million in successive periods, the object being to show that with the progressive efficiency of infant vaccination, small-pox had progressively diminished:

	Small-pox Mortality, all Ages.
(1) Vaccination optional (1847–53)	305
(2) Vaccination obligatory but not efficiently enforced (1854–71)	223
(3) Vaccination obligatory and more efficiently enforced by vaccination officers (1872–80)	156

Dr. McVail quoted with approval the Registrar-General's commentary on this table:

> The figures show conclusively that coincidently with the gradual extension of the practice of vaccination there has been . . . a gradual and notable decline in the mortality from small-pox at all ages.

And again:

> The hypothesis that would explain the great fall in small-pox mortality by referring it, not to vaccination, but to general sanitary progress, must be rejected as utterly untenable.

If it could have been foreseen that at a later period a still more marked diminution in small-pox would have coincided with a greatly decreased efficiency of infant vaccination, the whole effectiveness of the table would have been completely destroyed. Yet at the time this table did seem most convincing; and I well remember in my early days making a lantern slide of it in order to illustrate an orthodox pro-vaccination lecture. From the propaganda point of view it was most "telling."

Dr. McVail has a good deal to say, favourable and unfavourable, about Leicester. He refers to the famous prophecy he made thirty-two years ago in *Vaccination Vindicated*, shortly after the town had decided to set the vaccination laws at defiance and to abandon infant vaccination. In that prophecy he not only foretold a repetition of seventeenth century experiences, *when the time arrived*, but called upon the Government to study and record the "catastrophe." How completely that prophecy was

mistaken Dr. McVail now, of course, admits. Small-pox has been repeatedly introduced into Leicester, sometimes in virulent form (in one outbreak there were 5 deaths out of 16 cases), and there have been three major epidemics; yet a reference to the figures given in Dr. McVail's first lecture will show how favourably Leicester compares with most other large towns, in spite of the fact that some 90 per cent. of the children born are not vaccinated. In one of the epidemics no less than 157 cases occurred in the short space of four weeks, scattered all over the town in 103 different streets. Dr. McVail says that we have never had a really infectious type of small-pox to deal with in Leicester. Surely that was a sufficiently severe test! Yet the outbreak was quickly got under control, and subsided almost as quickly as it arose. Again, in the peroration at the end of *Vaccination Vindicated* Dr. McVail wrote:

> Among medical men there is, as has been well said, no vaccination question. They know the truth . . . so that it becomes the duty of those who know the value of vaccination, who understand the danger against which it protects . . . to teach their ignorant and misinformed neighbours what is in fact the truth about vaccination . . . the truth about a duty which cannot be neglected except at the price of infinite suffering and loss of life. Again I plead for instruction of the people in the matter of vaccination . . . but not . . . by leaving helpless children to die by thousands from small-pox, as assuredly they will die if a large unvaccinated community be permitted to grow up in our midst.

Dr. McVail observes that I have quoted from *Vaccination Vindicated* on more than one occasion, and it may be asked: Why rake up thirty-year-old prophecies which we all know now have not been fulfilled? The answer is: Certainly not in order to score off Dr. McVail, for whom I have the deepest personal respect, and who, after all, was only giving eloquent utterance to views which were held and expressed by almost the whole of the medical profession at that period. I frankly admit that at one time I myself was as firmly convinced of the danger of neglecting infant vaccination as any one. My real reason for recalling these mistaken prophecies is because, had it not been for prophecies such as these, confidently made and reiterated again and again by the highest medical authorities, the successive Vaccination Acts would never have been passed. It was because the magistrates of Leicester at one time firmly believed in such prophecies, whilst "ignorant and misinformed" people did not, that 1,154 prosecutions took place in Leicester in a single year, and that many people had their goods sold or went to prison. Altogether, in Leicester, until the town rose in revolt, over £2,300 was levied in fines, mostly from poor persons, for resisting the vaccination laws which were passed on the strength of these prophecies. I say unhesitatingly that if we had known then what we know to-day—if Dr. McVail's Milroy Lectures could have been published fifty years ago instead of yesterday—I do not believe that any of those people would ever have been prosecuted or penalized. And let us not forget that on the strength of those prophecies people are still being prosecuted to-day.

In his second lecture Dr. McVail deals with my contention that infant vaccination tends to spread small-pox by "masking" the disease. He does not deny this tendency or attempt to controvert it, but suggests that it would not be fair to allow children to be exposed to the risk of small-pox merely for the sake of possibly making it easier to control the spread of the disease. My answer to this is:

1. Laws passed by the State are for the sake of the community as a whole and not for the sake of the individual. If it should be true, as I suggest it is, that the balance of advantage so far as the community is concerned is against infantile vaccination, then although a private medical attendant might be justified—if the danger of small-pox were very real—in advising that an infant should be vaccinated (just as in the old days he might have advised inoculation, although against the interest of the community as a whole), yet certainly the State would not be justified in making infant vaccination obligatory under pains and penalties for default.

2. But I submit that the danger of an infant contracting small-pox is no longer real. It has become so remote (and this not because of infantile vaccination but because small-pox is leaving the country) that it is now a very debatable point whether the risk the infant runs from vaccination is not definitely greater than the risk from small-pox. Moreover, one of the things we have learnt about small-pox is that where modern methods of prevention are carried out it is essentially a disease of adults rather than of children. It is spread in the factory, inn, lodging-house, etc., rather than in the home or school. (I am interested to learn that Dr. McVail, like me, has never had occasion to close a school on account of small-pox.)

Dr. McVail devotes a good deal of space to criticizing the so-called "Leicester Method," but I fear it would take too long to follow him in detail. Suffice it to say that "the proof of the pudding is in the eating." Personally I am quite content to speak only of "the modern method" of dealing with small-pox, and this, whether we admit it or not, places no reliance upon infant vaccination. The old talk about infant vaccination being our "sheet anchor" is now quite out of date.

As for the future, Dr. McVail is careful to make no more prophecies. He suggests the possibility of a serious recurrence of small-pox as a sequel to the war. He admits, however, that so far—except in much-vaccinated Germany, which has special difficulties to contend with from proximity to Russia—no recurrence has taken place. He emphasizes that in one respect we are better protected by vaccination than ever before, because of the vaccination of our troops during the war, but I would point out that the vaccination of our soldiers is recent adult vaccination, and constitutes no argument whatever for infant vaccination.

It is satisfactory to find that Dr. McVail is no longer seriously alarmed for the future, even if small-pox should recur. He writes:

> If, however, small-pox were to invade this country, the measures at our disposal and our preventive equipment generally should enable us to deal with it, despite the fact that, on the whole, we are going back on, rather than developing, our position in regard to general protection obtained beforehand. [That is, in spite of the increasing neglect of infant vaccination.—C. K. M.]

This, of course, is a very satisfactory admission, and I trust it will be noted by all members of Parliament. He makes another significant admission which I trust will also be duly noted. At the end of his second lecture he says:

> There is, however, one conceivable condition which would not only justify but demand the cessation of vaccination. If small-pox were to disappear, so also manifestly would the need for vaccination . . . if there were no need for vaccination it would have no value, and the marvellous decrease of small-pox . . . makes such a possibility, however remote still, yet apparently less remote than ever before.

I have said much the same thing in my book, *The Vaccination Question in the Light of Modern Experience*, only I go a little further, and say that as small-pox has *already* virtually disappeared so also has the need for infant vaccination. In this matter I am merely a few years ahead of Dr. McVail, that is all.

In conclusion, in order to prevent misunderstanding as to just where I stand, allow me to make my confession of faith. Vaccination, as a scientific operation for conferring complete though temporary immunity to small-pox *upon the individual*, will live for ever, and will always remain an outstanding achievement to the credit of British medical science. It will always be of the greatest service in combating outbreaks of small-pox whenever such may occur, and it robs such outbreaks of their chief terrors. But infantile vaccination as a State institution aiming at the universal vaccination of infants has been living on a reputation largely based on prophecies now proved to have been erroneous; it is already discredited by large masses of the population, and is rapidly becoming obsolete. I submit that the time is ripe for a reconsideration of the question whether it is any longer really necessary.

THE HOSPITAL DEADLOCK IN TASMANIA.

THE island of Tasmania, which lies to the south of Australia, is about three-quarters the size of Ireland, with rather more than 200,000 inhabitants. The executive authority is vested in a Governor appointed by the Crown, aided by a council of responsible ministers, at whose head is the Premier. The principal towns are Hobart, the capital, and Launceston; each has a general hospital with about 170 beds, the greater part of whose income is derived from a Government grant. The other hospitals of the island would appear to be comparatively small;

according to *Burdett's Hospitals and Charities*, much the largest of them is the Devon Hospital at Latrobe, with 60 beds, also mainly supported by a Government grant.

For many months a dispute has been dragging on between the Government of Tasmania and the Tasmanian Branch of the British Medical Association. The conflict arose on a question of principle. The Government maintains that rich and poor alike have a right to admission into State-aided hospitals; the medical profession replies that the admission of well-to-do persons constitutes hospital abuse and cuts at the root of the system of attendance by honorary medical officers.

The story begins in June, 1916, with a letter from the Tasmanian Branch drawing the Premier's attention to the admission of well-to-do persons at the Launceston General Hospital, and asking for an inquiry into the alleged abuse. The Premier's reply contained a denial by the hospital board of the existence of abuse, and an assertion that any person had a right to the benefits of the hospital. Five months later a deputation from the Branch waited on the Premier and submitted evidence showing that by the admission of well-to-do patients poor patients were prevented from being admitted. The Premier contended that the hospitals were not for the poor only, but for the whole general public, who should have the benefit of the honorary services of the medical officers. A fortnight later the Premier was informed by letter that the situation created by the admission of well-to-do patients into State-aided hospitals was intolerable, and that a large meeting of the British Medical Association in Tasmania had resolved that if the Premier persisted in his policy the honorary system must of necessity cease. This brought a request from the Premier that the matter might remain in abeyance as he proposed dealing with it as a whole in the recess. On December 13th the Premier was asked by letter to prevent the admission of well-to-do patients pending full consideration of the hospital question; well-to-do patients were defined as those able to pay operation fees as well as maintenance fees. Nearly six weeks were spent in trying to extract a reply from the Premier, but the only result was a further request from him for the matter to remain in abeyance. On St. Valentine's Day, 1917, the Premier was told that unless he gave an assurance by March 1st that the abuse should cease the honorary staffs would be instructed to resign. The two next entries in the summary of correspondence are laconic: "February 16th. Letter from the Premier asking questions." "February 24th. Letter from Premier's secretary saying Premier in Sydney."

March 13th came, but still the Premier was silent, and it was resolved to call on all honorary medical officers of State-aided hospitals to resign. Three days of grace were given. On the fourth day the Premier brought himself to the point of writing a letter to say that a full Cabinet could not come to a definite conclusion; and would the Association reconsider the question of resigning? A conference with the Premier on April 11th came to nothing—he would give no assurance. He wrote next day asking that his proposal "that the resignations be withdrawn pending the drafting of the proposed Hospitals Bill," should be placed before the members of the British Medical Association in Tasmania.

In the course of further correspondence the Branch asked the Premier for an assurance that he would introduce a clause in the Hospitals Bill excluding well-to-do patients from State-aided hospitals, to which the Premier rejoined that he was not to be "coerced by the British Medical Association bringing about a strike of medical men." A great many letters also passed between the Tasmanian Branch and the Secretary of the Hobart General Hospital. From the summary of these which we have before us, it appears that each side desired an amicable settlement, and that the Board of Management of the hospital was not unwilling to exclude wealthy persons from the benefits of the institution.

After May, 1917, several abortive conferences were held, and the Government finally drafted, and passed, a Hospitals Bill admitting rich and poor alike to the hospitals of Tasmania. In order to get over the difficulty of staffing the hospitals a Medical Act was passed permitting the admission of Americans to the Medical Register of the island. Much party capital has been made of the phrase "a strike of doctors," but the Tasmanian Branch of the Association made it quite clear from the beginning, and insisted throughout, that it never was the intention of the honorary medical officers of any hospital to come out in a body and leave the patients with no one to attend them—on the contrary, they expressed their willingness to continue to attend after their resignations had been sent in until suitable arrangements were made, and to attend emergency cases when requested to do so by the resident staff.

It is difficult at so great a distance to pronounce judgement in a case of this kind. The feeling of professional kinship prompts us to take sides with the medical profession of Tasmania in its fight with the Government on a question of principle. The statement before us conveys the impression that the Tasmanian Premier is wanting both in statesmanship and in appreciation of the ideals and traditions of medicine. However provoking the dilemma in which it was placed by the solidarity of the local profession, the Government of Tasmania should not have gone to the length of passing an Act designed to introduce what is vulgarly called "blackleg" practice. It is to be noted that the honorary medical officers, although resigning their hospital posts, offered to assist when requested, but the offer was not accepted. A strike which is not a strike *à outrance* could not have called for the extreme measure of legislating to bring in medical men from a country with which Tasmania is not in medical reciprocity. It is hardly to be supposed that the best type of American practitioner will be attracted by the opportunities offered by the Tasmanian Government.

So much for methods. In former days it would have been easy to speak as positively on the question of principle upon which the whole dispute turns; but times have changed and new ideas are being discussed. The Tasmanian general hospitals are to a large extent State-supported, and it is hard to deny offhand the validity of the proposition that all persons have a right to their benefits. Nevertheless the honorary medical staff hold quite properly that their gratuitous services should be confined to the sick poor. Sir Bertrand Dawson, in his Cavendish Lecture on the future of the medical profession, laid down as an article of faith "that the best means for preserving health and curing disease should be available for (I do not say given to) every citizen, irrespective of his position, and by right and not by favour." The significance of the six words placed between brackets becomes evident when Sir Bertrand Dawson's principle—which we have not seen challenged—is applied to the situation in Tasmania. As was foreseen long ago, state aid when fully applied to hospitals is incompatible with the honorary system. The deadlock in Tasmania is directly due to nationalization of the hospitals; it raises issues of the greatest consequence to the public and the medical profession of the British Empire. Such being the case we have little doubt that the Hospitals Committee of the British Medical Association will give it the attention which it deserves.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Executive Committee of this Fund was held at the offices of the *Lancet* on Wednesday, April 2nd, when the Treasurer announced that since the last meeting certain subscriptions had come in, notably a contribution of £500 from the South Australian Belgian Relief Fund, received through the Agent-General for South Australia. He pointed out also that when at the last meeting his statement showed a balance of £91 16s. 6d. to be remaining in hand, there was also to the credit of the Fund an additional £200, the monthly subsidy from the American Red Cross, though the sum had not at that time passed through the bank. The Fund therefore, he said, stood at £799 in credit. It was decided by the Committee to send to Belgium at once £700 in view of Dr. Pechère's statement recently published in the medical and pharmaceutical press, stating that help is still badly needed. A grant of £20 was also made to a Belgian doctor who has throughout the war been doing good service at a war hospital and who required the assistance on his return to Belgium.

The Chairman then, in the name of the Committee, presented Miss H. de L. Brock with a travelling clock as a personal gift from the members of the Committee and in some slight recognition of the great value of her services to the Fund.

THE CARLISLE EXPERIMENT IN LIQUOR CONTROL.

DR. HENRY BARNES, O.B.E., Carlisle, writes:

Two interesting reports on this subject have recently been published—one presented by the Chief Constable of Carlisle to the Mayor and Justices at the Brewster Sessions and the other the report of the General Manager of the Central Control Board (Liquor Traffic).

The Chief Constable states that the number of licensed houses in Carlisle is now 69, being 50 less than in 1915, a reduction of 42 per cent. There is now one licensed house to each 756.88 of the population according to the census of 1911. Three licences have been extinguished during the past year. No prosecutions against innkeepers for offences against the Licensing Acts have taken place during the year. The number of persons proceeded against for drunkenness during the year was 88, a decrease of 241 compared with the previous year, and only 4 persons were convicted for assaults on the police, against 17 in 1917 and 37 in 1916. The number of convictions for drunkenness in Carlisle during the year is the lowest on record during all the years in which statistics have been kept. This remarkable diminution since direct control was instituted is attributed to three main causes:

1. Fewer houses with less temptations to drink.
2. Better supervision.
3. The scarcity of intoxicants brought about by the Food Controller's regulations and not confined to Carlisle.

The somewhat drastic rationing regulations which the Control Board put into force in May worked exceedingly well so far as public order was concerned, and except for the complaints as to general shortage there has been little ground for legitimate grievance. The Chief Constable testifies strongly that the arrangements made during the year worked with remarkable smoothness, and this contributed in a large measure to the gratifying reduction in the number of convictions. Attention is also called to the beneficial effects of increased sobriety, and, although no statistics can be produced, there has undoubtedly been a resulting improvement in the economic efficiency of the people and a reduction in misery, crime, and degradation of every sort, which can easily be imagined.

The third annual report of Sir Edgar Sanders, the General Manager of the Central Control Board (Liquor Traffic), contains many interesting observations. The area now under control extends to about 320 square miles with a population of 115,000, and contained 339 licences before the Board commenced operations in June, 1916. It was a most difficult problem to solve. Owing to the shell shortage in 1915, the Government decided to erect large munition works on the northern shore of the Solway Firth, about nine miles from Carlisle. Operations were begun on the site in the autumn of 1915, and speedily the district was crowded with large numbers of constructional workers brought from all parts of the country. Overcrowding became general, and the men, earning large wages and with few interests to fill their leisure, naturally turned to the public-houses; the result was that drunkenness became very common. This was especially the case on Saturday nights, when large numbers of these navvies came to the city to do their shopping and to seek amusement. In the words of an eye-witness:

> Some five thousand of the said navvies nightly remove themselves from the scene of their labour to Carlisle, with the result that a once respectable city, chiefly notable for its Castle, its Cattle Market, and its hanging of rebels, has become a city of dreadful Saturday nights. . . . I have no need to penetrate the darkness, to paint you graphic word pictures of Carlisle's Saturday nights—of the inns where the men stand in solid formation to make massed attacks on the alcohol, and even stand in elevated echelon all up the staircases because there isn't room enough on the floor.

Among the early restrictions imposed by the Board were the cutting down of the hours of sale of intoxicants to 5½ daily; the limitation of "off" sales of spirits to the midday opening periods on five days in the week and to quantities not less than a reputed quart bottle; no treating; no credit; no hawking of liquor; no long pull; compulsory dilution of spirits; and the abolition of "bona fide travellers." Sunday closing was also imposed in the part of the area near the Border, but in February, 1919, it was abolished on the recommendation of the Local Advisory Committee, and so far this has been justified, as the convictions for the three months have only been 12 as compared with 36 in the corresponding period of 1918. Further restrictions were, however, found to be necessary. Spiritless Saturdays were ordained; the "off" sales of spirits were restricted to fifteen houses instead of 100; grocers' licences were abolished; the sale of mixed drinks, locally known as "a heater and a cooler," was discouraged; sales to young persons were prohibited. Rationing became necessary as a result of the Orders of the Food Controller.

Table showing the Rise and Fall of Convictions for Drunkenness in Carlisle.

1914			275
1915.	First nine months	107	
,,	Last three months	170	
			277
1916.	First six months	564	
,,	Last six months	389	
			953
1917.	First six months	229	
,,	Last six months	91	
			320
1918			80

The General Manager gives in his report interesting details of the constructive work of the Board. Recognizing that alcohol affects a hungry man more quickly than one who has fed, a supply of food was provided in many places where drink was sold. The result was not a great success. In a few cases, however, the sale of meat pies, bread and cheese, and the like, has been maintained with fair success. The Board's experiment with what is known as "food taverns" has been successful from the first, and during 1918 the takings for food at the seven taverns in Carlisle amounted to £16,370 and represented 33.4 per cent. of the total takings from all sources of such houses. The total takings for food at all the Board's managed houses increased during the year 1918 by no less than 67 per cent. of the corresponding total for 1917. This is partly accounted for by the fact that the number of hotels taken over was greater than in 1917. In order to meet the demand there might be for meals in country inns, a special room has been set apart where teas and light refreshments can be served, but a sufficient time has not elapsed to test the success of this scheme. A number of hotels have been taken over and put under management. The Board's property now includes 5 breweries and 279 premises which were licensed when acquired. Of these, 58 have been dislicensed, the Board retaining possession of the property; in addition 47 other licences have been suppressed without the Board becoming possessed of the premises concerned; 164 have been placed under management, and the other 57 remain for the present in the hands of the tied tenants.

The capital involved in the undertaking at March 31st, 1918, amounted to £835,053 3s. 5d., and the trading profits are returned as £201,726 17s. 5d., against which was charged proportion of cost of alterations and improvements to property and fixed plant amounting to £14,733 19s. 6d., leaving £186,992 17s. 11d. to be carried to profit and loss account. This surplus is equivalent to a total return of 15 per cent. per annum after writing off preliminary expenses and other special items. The profits from the inception of the scheme to March 31st, 1918, have sufficed:

1. To meet ordinary expenditure and depreciations;
2. To defray preliminary expenses and a large part of the cost of reconstructions;
3. To pay interest on the net sums issued from the Exchequer;
4. To replace upwards of one-fifth of the average capital.

There will be general agreement with a statement in the report that "the licensing problem is one of the most perplexing of all social problems. Its satisfactory solution has baffled succeeding generations of politicians." The Carlisle experiment has been attacked by the extremists on both sides. It does not please the prohibitionists and it does not satisfy the temperance faddist, and it is equally distasteful to the "trade," but it has shown that the liquor trade can be carried on subject to reasonable regulations without detriment to the well-being of the community and without undue interference with the liberty, tastes, and preferences of the large mass of the adult population. It has further shown that the transfer from private ownership to public control can be carried through without loss to the national Exchequer. Above all, it has offered a new solution of the problem of intemperance, and deserves the closest attention of all interested in dealing with one of the greatest evils of the day.

British Medical Journal.

SATURDAY, APRIL 19TH, 1919.

THE SPECIAL MEETING IN LONDON.

WE hear on many hands cordial expressions of the opinion that the British Medical Association, by the special Clinical and Scientific Meeting held in London last week, has earned the gratitude of the profession. The moment was chosen when the strain of active war was over and while yet many of our brothers of the Dominions were still in England and not a few of the officers of the Medical Corps, U.S.A. The invitation to attend was accepted by many of these officers, and many officers who are serving or have served in the R.A.M.C. during the war were present. Khaki was not the only wear, but it was worn by many; and let it be remembered that the khaki wearers of to-day and yesterday are going to determine the future of medicine in this and the next generation.

The work of the meeting was concentrated in a few sections and on a few subjects. These subjects were selected by the Programme Committee, under the wise and energetic guidance of its chairman, Colonel Adami of Montreal, because they made a present appeal and contained lessons from war experience for civil practice in the future. Those who accepted the invitation to open each discussion had themselves all been in close contact with the subject in hand; in general they obeyed the injunction to be brief in the written word and still briefer in the spoken, and there was thus obtained a vivid presentation of the ascertained facts and a bold handling of disputed points which stimulated later speakers to express assent or dissent with equal directness. Time was not expended on academic formulas before coming to essentials. If occasionally there was some little heat it was, we believe, as that of the lamb-like Brutus,

> That carries anger as the flint bears fire,
> Who, much enforced, shows a hasty spark,
> And straight is cold again.

The President of the Association, in his short speech at the dinner, crystallized the opinion of all those best able to judge when he said that never before had there been a concourse of the kind which showed such thorough earnestness, businesslike determination, and scientific enthusiasm. Many also will agree with him in thinking that similar concentration in future annual meetings is desirable, so that the whole strength of the Association could be thrown for the time being into certain specific channels of research and observation; and will agree with him also in believing that more progress would be achieved on this plan than from desultory discussions over a large area of subjects. Sir Clifford Allbutt, as no other man in medicine, combines the backward glance of long experience with the forward vision of youth, and we make no doubt that his opinion will weigh strongly with those to whom will be entrusted the organization of the annual meeting over which he will preside at Cambridge next year.

The proceedings of the meeting last week will be published in a separate volume, which will be forwarded to every one who attended the meeting whose address is known, and to all members of the Association.

SHORT NOTES ON THE SECTIONS.

DISCUSSION ON INFLUENZA.

A VERY large audience met under the chairmanship of Colonel Haven Emerson, U.S.A. Medical Corps, to take part in the discussion on influenza at a joint meeting of the Sections of Medicine and of Preventive Medicine and Pathology on Thursday morning, April 10th.

Major-General Sir Wilmot Herringham opened the discussion by giving an outline of the epidemic as met with in France from its first appearance as a mild and transitory fever in May. He traced its spread with gradually increasing virulence through the July epidemic, when pulmonary symptoms first appeared, to be followed by a most severe outbreak in September, with a mortality of 5 per cent.; this, subsiding in January, was followed by a third wave, beginning in March, but of lesser severity and incidence. He pointed out that two factors—namely, the immense and sudden incidence and the course of the disease—suggested a different disease from that which we had been accustomed to previously. He dwelt on the disproportion between the cyanosis and clinical signs and the later appearance of a severe albuminuria, while in the third epidemic jaundice became an associated symptom. He touched on the various symptoms of each epidemic, but as these were detailed in the printed reports, which were obtainable, he did not dwell on them. As to treatment he was not hopeful. He had not found anything that approached a specific remedy, though a large variety of methods had been tried, including vaccines and even the serum of convalescents. In conclusion, he thought that these so-called influenza cases were of the same character as those seen in previous winters, but especially in 1916–17. Recalling the epidemic of 1889, characterized by its harmfulness to the young, the infrequency of severe pulmonary complications, and the frequency of severe nervous sequelae, he questioned whether the present disease was influenza at all, or, if so, whether it had not considerably changed its character since then.

Captain M. Greenwood then dealt with epidemiology, in a paper that scarcely lends itself to summarization. By comparing the records of a mixed artisan population and a military population of adult males in the same period he concluded provisionally that there was no clear-cut formal difference between the outbreak of 1889-90 and that of 1918, nor between its evolution in a mixed population and in one homogeneous with respect to age and sex. He suggested the existence of a double periodicity to be referred to the coexistence of two distinct strains of infecting organisms. Lastly, he dealt with the question of acquirement and loss of immunity in relation to the facts, and concluded that there was nothing opposed to the common-sense belief that the *scale* of the recent epidemics has been magnified by unfavourable hygienic conditions, to which the majority of the world had been recently exposed.

Major Bowman, C.A.M.C., was kept away by illness, but in his paper he dealt with etiology, and summarized the bacteriological investigations and then his work with a filtrable virus obtained from sputum and blood used to inoculate monkeys and to obtain cultures. He had succeeded in cultivating an organism to the fourth generation from tissues of infected animals, and this in experimental animals produced lesions closely resembling influenza in man. The preliminary note on his experimental work has already been published (BRITISH MEDICAL JOURNAL, December 14th, 1918). In the absence of Major Bowman, Colonel Adami summarized the work of the committee, and Captain O'Connor showed lantern slides illustrating the changes in experimental monkeys, and compared them with human tissue. In the animal

lungs was a strikingly characteristic engorgement and exudation into the alveoli; with, in places, actual solution of the alveolar walls.

Surgeon Captain P. W. Bassett-Smith, R.N., dealt with the methods employed in the navy. He pointed out the severity of incidence on board ships, there having occurred 80,000 cases in the navy in the year. He produced statistics of preventive vaccination amongst the men. Colonel A. B. Soltau commented on the clinical manifestations of the various waves of the epidemic and its spread from the Second Army to the First. Major Norman White, I.M.S., spoke of the epidemic in India as unparalleled in its incidence and severity, in British India the death-rate having totalled 20.7 per mille in a population of 238 millions, and in Bikanir it reached 89.5 per mille. Lieut.-Colonel Greig, I.M.S., also spoke of his work in India from a bacteriological standpoint. Only two bacteria were found in the sinuses of the respiratory tract — namely, Pfeiffer's bacillus and the pneumococcus. In the enlarged bronchial glands Pfeiffer's bacillus was also found. Dr. W. J. Tyson compared the various epidemics he had passed through since 1878; he described the one under discussion as unique, and doubted whether it should be labelled influenza. Major Michael Foster gave the results of protective inoculation and considered that the evidence of its utility was extremely slender. Lieut.-Colonel G. B. Foster, U.S.A., dealt in general terms with the filtrable virus. Major Tytler, C.A.M.C., who had worked at Boulogne, said he had recovered Pfeiffer's bacillus in 93 per cent. of cases. He held that the question of secondary infection was the most important from the standpoint of mortality. Major Patterson touched on the work in Rouen, and summarized a valuable paper dealing with bacteriology and morbid anatomy, dwelling on the importance of Pfeiffer's bacillus as a secondary infection. Mr. E. B. Turner strongly urged the use of salicin as a certain cure when used in the way he outlined. Lieut.-Colonel Gordon Gullan dealt with the epidemic in Gibraltar, and considered it the same disease as seen in 1889–90, with which also he included the majority of cases of trench fever. Colonel Homer Swift, U.S.A., spoke of the necessity of segregation of influenza cases, which, together with early hospitalization and the minimum of treatment, he held to produce the best results. Dr. R. J. Ewart, discussing epidemiology, held that the epidemic period and its virulence really formed an object lesson in evolution.

Many other speakers were awaiting an opportunity to participate in the discussion, but as it was obviously impossible to exhaust the subject matter in so short a session and the time limit had passed, the Chairman brought the proceedings to a termination.

VENEREAL DISEASE.

A FULL house attended the disoussion on venereal disease in the Section of Medicine on the morning of April 11th. The chairman, Sir William Osler, in a pithy introductory speech, laid down four lines for future progress. First, venereal disease must become notifiable, just as is tuberculosis; secondly, the precise prevalence of both gonorrhoea and syphilis in communities must be carefully studied, for we can at present only guess at the number of infected persons. Thirdly, preventive measures more successful than those we have at present must be contrived; and, finally, the efficiency of the various treatments employed must be both studied and improved.

Brevet Colonel L. W. Harrison gave a summary of his introductory address printed in full in the *Handbook* of the meeting. He emphasized the desirability of indirect work, free from the antivenereal label, in the further struggle against these diseases; the importance of local treatment at the earliest possible moment; and the need for some new remedy against gonorrhoea acting not locally but through the blood—possibly an improved vaccine?

Colonel Ashburn, U.S.A., stated that of the 10 millions or so male inhabitants of the United States aged between 21 and 30 approximately 1 per cent. had recently been found to have venereal disease. In a very sound and sensible speech he sketched the antivenereal measures employed in the American Expeditionary Force; promotion of continence and the best available prophylaxis being chiefly aimed at. The haunts of prostitutes were put out of bounds to all American troops; as for continence, the incidence of venereal disease was about 4 per cent. in these troops; prophylactic measures had been employed by about half the men infected, and their adequate adoption was very truly said to lie in the hands of the company officer rather than the medical officer. Colonel Ashburn expressed doubt as to whether venereal patients in the army should in any way be punished as such, and he concluded that the best antivenereal measures that could be taken were four—(1) moral education, (2) the suppression of prostitutes, (3) prophylaxis after irregular intercourse, and (4) punishment of the offenders. Captain McDonagh emphasized the differences likely to occur in the mass treatment of civil as compared with military venereal patients, and dwelt on the advantages of intramine and colloidal manganese as antivenereal drugs.

Colonel Bolam discussed the undue prominence given to jaundice as a complication due to treatment with arsenic compounds in syphilis; jaundice occurred in 115 out of nearly seven thousand patients thus treated, with 6 deaths, and he showed that the occurrence of such jaundice depended on the size and spacing of the doses to a large extent. Only 43 cases of dermatitis had occurred in 9,379 patients given arsenobenzene, with 2 deaths.

Major Peyton detailed the spacing and dosage he had found best in the treatment of syphilis; the combined intravenous and intramuscular injections, as first used in August, 1917, and since employed in 3,500 cases, yielding 18 clinical relapses and not many complications. Lieut.-Colonel Scott Jackson, in a breezy and emphatic address on the prophylaxis of venereal disease, anticipated no difficulty in applying the necessary compulsion to the civil population, calling upon medical men to give a clear lead here. He advocated strongly the distribution of prophylactic outfits to those about to expose themselves to possible infection; such outfits making men hesitate, rather than increasing the feeling of security. The object of propaganda should be to increase continence. Surgeon Commander Robley Browne gave an account of the antivenereal system employed in the navy, and asked for information as to the therapeutic value of galyl, which he was inclined to rate not very high. Major McGregor praised colloidal manganese in the treatment of gonorrhoea; intramine, he said, was of service in such conditions as syphilitic glossitis and stomatitis; in 20,000 injections of arsenobenzene he had met with 43 complications and no deaths. Lieutenant McLeod doubted whether Colonel Harrison did full justice to the importance of the early treatment of gonorrhoea, and stated that he had obtained good results with McDonagh's methods in a first series of cases of gonorrhoea.

Colonel MacWhae, A.A.M.C., described the method of prophylaxis used in the Australian forces in France. A colossal amount of prophylactic treatment had been undertaken; he described the policy of early treatment centres, where eight days of treatment were given in the line without sending the patients to hospital or docking their pay, followed by nine days of observation, in which relapse meant sending the patient into hospital. About

2,000 cases had occurred in a total of 100,000 men. The full time allowed for it having elapsed, the discussion then closed.

PROGNOSIS IN CARDIO-VASCULAR AFFECTIONS.

THE Chairman, Sir James Mackenzie, briefly indicated the importance and obscurity of the subject under discussion, as shown by the great difficulties that had been encountered in categorizing recruits. Dr. Lewis gave a general introduction to the subject in a paper which had been printed beforehand. He mentioned that there were now about 70,000 ex-soldiers pensionable for cardio-vascular disease, of whom from a third to a half were suffering from their disability when they were allowed to enlist. He dwelt on the practical importance of heart disease without physical signs, but with incapacity for exertion, detectable only by the systematic employment of exercise tests. Such tests, he added, would in future be of use to pensions boards, and should be available also as the criterion of fitness for dismissal from hospital in the case of civilian patients.

Professor Wardrop Griffith described the methods employed in the Northern Command for dealing with all sorts of cardiac lesions, D.A.H., and cardiac irregularities. The most difficult cases to assess were, he said, those with a systolic apical bruit and doubtful signs of hypertrophy. He also described as probably indications of early mitral stenosis the presence of an abrupt first sound and a double diastolic sound—excluding from that the reduplicated second sound. Captain Levine, U.S.A., pointed out the advantages with which enlistment had started in the United States; every use was made of Dr. Lewis's pioneer work, and invalidity for cardio-vascular disease had proved proportionately rare in the U.S. army. He estimated that about 5 per cent. of the 10 million males aged 21 to 31 in that country had some degree of D.A.H. in civil life. In gassed patients in France he had seen much temporary D.A.H., which was apt to disappear when he got them "hiking a bit" and doing calisthenics. Captain H. J. Starling laid stress on the association of D.A.H. with emotionalism, and also with toxaemias resulting from such infections as trench fever, influenza, and rheumatic fever. Rest in bed was, he had observed, the worst treatment for D.A.H.

Colonel Rudolf, C.A.M.C., praised the systematization of physical tests by Dr. Lewis, and attributed much of the trouble in D.A.H. to neurasthenia. Colonel J. Hay gave an account of the cardiac work in a command, and pointed out that Dr. Lewis's most valuable methods of training would be less easy to apply in the case of civilian patients; group training was, in the same way, hardly applicable to officers with D.A.H. The more difficult cases he had met with were those of the frankly neurotic patients, and those with what he believed to be chronic apyrexial infections. Cardiac training methods should be in the hands of optimists and believers only. Major Cottin detailed some interesting observations on the pulse rate in various classes of V.D.H. and D.A.H.

Dr. J. E. MacIlwaine gave an excellent account of the treatment of D.A.H. at a base hospital in France. He laid great emphasis on the importance of mental stress in the production of D.A.H., and noted that "fitness" in the army sense meant capacity for endurance. Dr. Leslie wished that clinical teachers could give better instruction in the matter of prognosis in heart disease. Captain Edgecombe described a case of D.A.H. that must, he thought, be due to a low and chronic form of cardiac infection; he spoke of the importance of the psychological factor in this condition, and put in a plea for uniformity in the scheme of exercise tests that would have to be employed by pensions boards in the future. For recording personal impressions as to heart sounds he had found the terms of classical metres useful—iambic, trochaic, spondaic, dactylic, and the like. Dr. Lewis replied briefly, and the well attended meeting closed.

MALARIA.

ON Friday morning, in the Section of Preventive Medicine and Pathology, a discussion took place on malaria, under the chairmanship of Sir Ronald Ross. Lieut.-Colonel S. P. James, in opening the discussion, referred chiefly to the risk of spread of malaria in England and the measures necessary to prevent it. Since the autumn of 1917 some 326 cases of locally contracted malaria had come to notice in this country, 224 of them being in the army, 34 in the navy, and 68 in the civil population. These cases occurred under conditions in which most of the human malaria carriers in England were concentrated in a limited number of military areas. With demobilization this condition would be changed, in that these malaria carriers would be scattered throughout the country each in his own home. During March this year the Local Government Board received notifications of 600 cases of malarial attacks in demobilized soldiers living in 278 towns or villages in 47 counties. Anopheline mosquitos were known to occur in all those localities—which were therefore places where there was a potential risk of new cases occurring. It might further be inferred that this potential risk existed in nearly all rural areas in the country. But in any locality, in order to convert the potential risk into an actual one, something more than the presence of relapsing malarial cases, anopheline mosquitos, and susceptible persons was necessary. Colonel James suggested that in England this further essential factor—the factor which actually determined whether or not new cases of malaria would occur in a locality—was neither the abundance of anophelines in the locality generally, nor of malaria carriers, but the degree to which there was close and continuous association between malaria carriers, anophelines, and susceptible persons. In connexion with this view he drew attention to the contrast between the conditions, on the one hand, at Epsom, where, in a locality infested with anophelines, a great concentration of malaria carriers was not followed by the occurrence of new cases of malaria; and, on the other hand, at Queenborough town, where, with comparatively few anophelines and only isolated carriers scattered in different houses in the town, quite an epidemic of locally contracted malaria occurred. Observations showed that at Queenborough there was very close and continuous association between the carriers, the anophelines, and susceptible persons, but that this was not the case at Epsom. In explaining the circumstances in which the necessary close association occurred, Colonel James suggested a new view of the habits of female *Anopheles maculipennis*—namely, that these insects, after being fertilized, sought first, not a meal of blood, but a place suitable for permanent stay. Such a place was found most often in cowsheds, but certain types of dwelling-house were also sufficiently suitable, and only such houses provided conditions favourable to the degree of close and continuous association necessary for the origin of new cases of malaria. On this view the prevention of malaria in England was a problem in connexion with housing conditions, as well as with other circumstances. In regard to necessary measures of prevention and control, Colonel James thought it most important that in every reported case of malaria sufficient inquiries should be made to ensure that every case of indigenous origin came to light as soon as possible, so that appropriate action might be taken at once if there was a definite focus of infection. It was important also that as far as possible thorough inquiries should be made into each case of relapse among demobilized soldiers, and that there

should be proper arrangements to provide those patients with adequate treatment, and with education in, and facilities for carrying out, the measures which they should adopt to prevent the infection of other members of their household. During these inquiries it should be possible, by carefully examining the house occupied by a malarial patient, to foretell whether new cases were likely to occur in the house, and to take proper steps to prevent them. [These steps are detailed in the General Order by the Local Government Board which came into force on March 1st, and they will be further emphasized in an official pamphlet by Sir Ronald Ross and Colonel James which is about to be issued by the Ministry of Pensions to medical practitioners throughout the country, and in a forthcoming Local Government Board report on the occurrence of locally contracted malaria in 1918.]

Surgeon Captain Bassett-Smith analysed the work in the navy, where there had been an unusually high incidence during the war, though in 1918 there was an enormous reduction, due to antimalarial measures having been taken. Intravenous injections of arsenic and antimony he described as non-curative. He instanced indigenous cases occurring at the Isle of Grain and at Eastchurch, all due to *P. vivax*, and summarized the measures taken on demobilization. Captain Angus Macdonald discussed the antimalarial measures in England, and said transmission was only likely to occur in places where the mean temperature reached 60°, as in the South of England in August, but very unlikely north of the Humber, except in overheated houses. He could not give any explanation of the sudden disappearance of malaria in this country. He adduced evidence showing the value of definite sanitary operations in England in the prevention of malaria. Major-General Sir Hayward Whitehead touched on malaria in Macedonia, where prophylactic quinine had been absolutely useless whilst sanitation had been all-important. He desired further knowledge on the flight of mosquitos. Lieut.-Colonel Andrew Balfour spoke in favour of quinine prophylaxis, which he held was a question of proper administration. Though not infallible, he said it was a valuable auxiliary treatment, and, indeed, in war time often the only method available. Dr. Malcolm Watson was quite sanguine about the possibility of epidemics in England and held that there was no danger under the present system of drainage. In his experience quinine prophylaxis had been a bitter disappointment. With this latter view Dr. Willoughby agreed, basing his views on an extensive experience in Egypt. Major Urquhart touched generally on malaria in Macedonia, and mentioned some work by Colonel Dudgeon on the destructive action of intramuscular injections of quinine, which contraindicated this method of administration. Mr. Bacot (Lister Institute) described his work with various culicifuges, none of which retained their activity for more than two hours after application. Dr. Murray had used a large variety of drugs, including the arsenical products and proprietary remedies, but none was found to be parasiticidal. He had obtained the best results with oral administration of quinine for many weeks. Captain John Thomson supported the oral method of administration, and had found quinine sulphate as satisfactory as any of the salts, whilst kharsivan also was an effective parasiticide. Mr. Carleton, to explain the comparative tolerance to large numbers of parasites in certain cases, suggested the production of antibodies, and mentioned some experiments with staphylococcal vaccines at Oxford.

Dr. Buchanan briefly summed up the work of the Local Government Board, which has been in active co-operation with the workers in this country during the war, but he did not think it justifiable to ask local authorities to start special antimosquito or antimalarial measures in the light of present knowledge. Sir Ronald Ross wound up the proceedings with a summary of the war experiences. He had evidence to support his "anti-relapse prophylaxis," but did not favour any drastic "sterilizing treatment." He suggested that quinine was not a direct parasiticide, but that it only stimulated some natural antibody which destroyed the parasite.

Filter-passing Viruses.

THE final hour of Friday's session was taken up by a brief account of six new viruses which would appear, from evidence adduced, to be the causal agents of polyneuritis, encephalitis, trench fever, influenza, nephritis, and rabies. Sir John Rose Bradford introduced the subject with a statement as to the events leading up to the discovery, a reference to the work on polyneuritis already published, and his reasons for holding that these were new and specific organisms which carried out to the full Koch's postulates. Captain E. F. Bashford then described his experiments on monkeys with the organisms in question, and demonstrated the lesions produced. The lesions in experimental influenza he described as being those characteristic of uncomplicated cases in man. Captain J. A. Wilson then described his method of obtaining pure cultures from tissues of patients after the principles of Noguchi, and detailed the six varieties, which he described as distinct entities and all filter passers. Lieut.-Colonel Foster, U.S.A., congratulated them on the striking results, being specially impressed by the careful controls with which Captain Wilson had surrounded his work. Sir William Leishman also spoke of the high opinion he had learnt to set on the work of Captain Wilson even before he undertook this research.

DEMONSTRATIONS.

Malaria.

THE London School of Tropical Medicine, on April 9th, gave an interesting and instructive exhibition at Endsleigh Palace Hotel, showing under the microscope all the stages of the malarial parasite in the peripheral blood and the internal organs. Dr. J. Gordon Thomson, the protozoologist to the school, showed under the high powers of the microscope the three species of malarial parasites which infest man, and by a beautiful series of specimens was able to illustrate the whole life-cycle of the parasite in the human body. The slides of special interest were those illustrating the life-cycle of the malignant tertian or subtertian parasite, and specimens were shown of this organism illustrating the life-cycle in the brain, spleen, liver, bone marrow, and intestine. Malignant tertian parasites sometimes produce coma, and a beautiful film was shown from the brain of a fatal case illustrating the fact that the capillaries of the brain are blocked with parasites during this condition. The cultivation of the malarial parasite *in vitro* was also illustrated by two remarkable slides, proving that it is possible to obtain in a culture tube the complete life-cycle of the malarial parasite as it occurs in the human body. These cultures were made by Dr. Thomson, and illustrated the fact that malignant tertian parasites, when partially or fully grown, tend to clump together in masses and so block the capillaries of the infernal organs. A series of slides was shown demonstrating the sexual phase of the parasite, which occurs in the anopheline mosquito, and so transmits the disease to man. Colonel Alcock, entomologist to the London School of Tropical Medicine, showed specimens of the mosquitos which carry malaria to man. The demonstration was accompanied by a series of paintings which enabled those interested to study the specimens thoroughly. The demonstration was arranged for the School of Tropical Medicine by Dr. Newham, Colonel Alcock, and Dr. J. Gordon Thomson.

INTRAMUSCULAR QUININE.

Colonel Leonard S. Dudgeon, C.M.G., A.M.S., gave a demonstration on Thursday, April 10th, at St. Thomas's Hospital, on bacillary dysentery and on the effects of intramuscular injections of quinine when employed for therapeutic purposes in malarial cases and when given experimentally in animals. Coloured diagrams, naked eye and microscopical preparations and charts were shown to illustrate the various points, while records of the chemical examinations of the injected muscles were shown to illustrate how rapidly the quinine was absorbed from the necrotic tissues. The main conclusions arrived at were as follows: That intramuscular injections of quinine should be reserved for special cases, as many reliable authorities have advocated, and should not be made a more or less routine procedure. That the injections should not be made in the arm or in the vicinity of an important nerve trunk or repeated too frequently in the same area. That concentrated, or dilute solutions such as are of practical utility, produce necrosis in all instances when injected into the tissues, and all preparations produce a similar effect. Colonel Dudgeon said that lack of knowledge concerning the bad effects of intramuscular injections was responsible for some of the disasters that had followed this method of employing quinine. The thousands of injections given without any apparent ill effect on the tissues, with, on the other hand, beneficial action on the cases of malaria, was sufficient reason to continue this method in selected cases.

LISTER INSTITUTE.

On Friday, April 11th, the demonstrations at the Lister Institute attracted a very large gathering. Sir John Rose Bradford and his co-workers, Captains Bashford and Wilson, exhibited the cultures and stained films of their newly described viruses, together with specimens, naked eye and histological, from animals which had been infected with influenza, nephritis, and encephalitis. There were also coloured plates and photographs, and the materials from which had been prepared the already published work on polyneuritis. Much discussion centred around these preparations. The pathological anatomy of influenza as it occurs in the human subject was shown in a series of specimens by Major S. W. Patterson. Macroscopic specimens of the lungs from cases dying early in the disease preserved in natural colours the characteristic massive congestion and haemorrhagic oedema; and numerous types of secondary bronchopneumonia were shown. Microscopic preparations from the lungs in all stages of the disease were demonstrated; and the toxic effect of the etiological factor was illustrated by specimens of liver, kidney, heart muscle, and bronchial mucous membrane. A fine set of microscopic preparations, made by Dr. J. A. Murray from cases collected by Major Cookson, was also shown.

Captain J. I. Connor and Major F. B. Bowman also showed cultures of a virus obtained by Noguchi's method from influenzal tissue, together with lungs of monkeys and guinea-pigs infected with filtered sputum. Sections of these lungs were shown, also guinea-pigs which had been inoculated with blood from influenzal cases with a resulting pulmonary lesion. Mr. A. Bacot and Dr. Arkwright demonstrated films and sections of lice infected with trench fever and typhus fever, showing the rickettsia bodies associated with these two diseases. Dr. Kettle had on view coloured plates and slides from cases of gas gangrene, and in an adjoining room was a large collection of anaërobes in various media. With these were some guinea-pigs killed with *Vibrion septique*, *B. welchii*, and *B. oedematiens*, and adjoining each the living guinea-pig which, preparatory to receiving the same lethal dose, had received a dose of the corresponding antiserum; also some histological specimens of the tissues of the experimental animals; and, finally, of value to the practical worker, McIntosh's and Fildes's adaptation of Laidlaw's method of obtaining anaërobiosis by means of finely divided platinum chloride.

Colonel C. J. Martin and the Institute entertained the visitors to tea in the library.

AIR FORCE TESTS.

Captain Rippon gave an interesting account, at the house of the Royal Society of Medicine, on April 11th, of the tests of physical efficiency applied to candidates who would be pilots; these tests in no way took the place of examination by a clinician, but were of service in indicating when he should be called in. Various tests that had been found good were described.

(1) Breath-holding; persons unable to take in a deep breath and hold it for over 34 seconds are unfit to fly at high altitudes, and there should be no dizziness or mistiness before the eyes at the end of this test.

(2) Expiratory force test; the candidate blows down a mercurial U-tube manometer, and a fit man should pass 110 mm. Hg pressure; the unfit may reach 70 or 100.

(3) A modification of (2), in which the lungs are filled with air, the mercurial manometer is blown into, and the pressure is maintained at 40 mm. Hg, while the pulse is taken every five seconds. In this test a physically fit man will hold the pressure for perhaps fifty seconds or more, while his pulse-rate gradually rises. An unfit man will hold the pressure for only twenty or thirty seconds, and his pulse-rate may either rise suddenly and then fall, or fall steadily as the test proceeds. A tired man will, of course, behave as an unfit man, and many interesting graphs illustrating this and similar points were thrown upon the screen.

(4) The pulse-rate before and after exercise. The technique adopted in this test is to take the pulse-rate while the candidate stands, then to have him step up on to a a chair and down again five times in fifteen seconds (taking the pulse-rate meanwhile), and finally to note the return of the pulse-rate to its previous figure. In the test thus carried out the pulse should rise 15 to 20, and return to the normal in 20 seconds; a rise of 25 or more indicates unfitness.

(5) Ability to hold the breath after exercise; exercise lessens this ability, and a good result would be, say, 55 seconds, whereas 20 seconds would be a bad result indicating unfitness.

(6) The vital capacity, as measured in the common spirometer; a good pilot has at least 3,800 c.cm. as an average. A modification of this test measured the vital capacity under pressure; the two readings should be about the same in a fit person; the vital capacity under pressure fell off in the unfit.

(7) Tremor: this is neglected if slight, but is a sign of unfitness if coarse.

(8) Equilibration: the candidate stands on one leg with the eyes closed. This simple method of examination is found to correlate with the other tests of physical fitness. Further tests employed are those for reaction time (the pendulum myograph), acuity of vision and hearing, and muscular sense.

Photographic slides of machines for testing the "lightness" or "heaviness" of candidates' hands on the "joystick" and his power of equilibration, were also exhibited.

Major Clements described an ingenious machine for testing distance judging, a faculty of great importance in effecting aeroplane landings. It was found that myopic people tended to effect their landing below ground, hypermetropes in the air above it, through difficulty in estimating their distance from the face of the earth. This machine measures the error of the candidate in adjusting a movable upright knitting needle at the same distance from him (16 ft.) as a fixed needle, without help from shadows adjoining objects of known size and the like. A demonstration of oxygen-breathing apparatus for fliers at high altitudes was given also, the pure oxygen being carried up either compressed, or in the liquid form.

METHODS OF CARDIO-DIAGNOSIS.

The electrocardiograph was the *pièce de résistance* given by the members of the staff at the National Heart Hospital demonstration on Thursday, April 10th. Dr. Russell

Wells gave an explanation of its theory and use, and an interpretation of the photographic records obtained from it, in such a way as to prepare the large audience for subsequent speakers, who pointed out the utility of the instrument in the diagnosis of various obscure but important cardiac lesions. Dr. Wells also took the opportunity to throw upon the screen an electrocardiogram believed to be the first recorded of its kind: one in which the apex of the heart appeared to be in electrical continuity with the left arm, and not, as is normal, with the left leg. The base of the heart was, as is usual, in electrical continuity with the right arm. Dr. J. S. Goodall explained the manner of interpreting various electrocardiograms taken from patients with such common abnormalities as hypertrophy of the right side or left side of the heart, and with the normal irregularities of cardiac action attributed to special susceptibility of the cardiac muscle to nervous control. He also showed an electrocardiogram from a case of partial sino-auricular heart-block simulating sinus arrhythmia, and others in which the electrocardiograph proved to be the only instrument capable of demonstrating the presence of localized patches of myocarditis—one, for example, from which a lesion of the right bundle of His could be diagnosed. Dr. R. O. Moon described the light thrown on bradycardia by the employment of the electrocardiograph, particularly in cases of delay in the conduction of the impulse to contract through the bundle of His and its associated conducting system. Many cases of bradycardia, as is well known, are attributable to partial or complete heart-block, partial or complete lesion of this conducting system. Dr. P. Hamill gave an excellent analysis of the various occasional irregularities observed in the heart's action; some of these are, of course, normal, and he emphasized the importance of the electrocardiograph in the accurate diagnosis of the cause of these occasional irregularities. Dr. F. W. Price gave a clear account of three serious disorders of cardiac action—namely, auricular fibrillation, auricular flutter, and paroxysmal tachycardia; the presence of the first of these he described as the cardinal indication for the exhibition of digitalis. Demonstrations of the various newer methods employed in the diagnosis of cardiac disease or insufficiency were also afforded. The employment of the electrocardiograph was explained by Dr. Wells and Dr. Hamill, with illustrative cases. Dr. Gibbs illustrated the use of the x rays and the interpretation of skiagrams of the heart; Dr. Price showed the polygraph; Dr. Goodall and Dr. Wells explained the method and utility of systematic records of the arterial blood pressure, and the reaction of the heart to the demands of physical work. In the pathological department Dr. Moon exhibited a number of interesting *post-mortem* specimens.

Orthopaedic Methods.

The demonstrations arranged at the Special Military Hospital at Shepherd's Bush dealt with the orthopaedic methods there adopted. Visitors were given an opportunity of seeing the end results of treatment of various deformities, such as fractures and ankylosed joints, the results of bone-grafting and nerve suture, and the various appliances and supports that gave the patient the maximum of comfort and usefulness. The cases here shown were those fit for discharge. In the other departments demonstrations were given of the many different means adopted to contribute to the final result. In the large gymnasium, with its special apparatus, the instructor conducted individual classes for the re-education of muscles and superintended exercises for deformities. Here one was impressed by the concentrated application of the patients to their particular exercises, a state brought about by a combination of genial discipline and sympathetic encouragement. In the well-equipped bath department the medical officer in charge explained the uses of contrast hot and cold baths, douches, whirlpool baths, aërated brine baths, and paraffin baths, which were employed in conjunction with massage and electrical treatment in the restoration of muscle function. In the Electrical Department demonstrations were given of the electro-therapeutic methods used for the maintenance of muscle tone and the treatment of nerves before and after suture, after being freed from scar tissue, or after nerve grafting. The technique of plaster splinting and fixation and of plaster casting, the special table on which patients lie when corrections are made previous to the application of plaster splints, and the latest surgical instruments employed in bone surgery were the subject of interesting demonstrations. Finally, the workshops where men were taught useful occupations in which they were not unduly handicapped by their disability gave an indication of the enterprise of this wonderful hospital, which owes so much to the stimulating influence of Sir Robert Jones.

Hospitals for Limbless Cases.

Sir John Lynn-Thomas, K.B.E., C.B., C.M.G., deputy inspector of military orthopaedics, gave a cinematograph lecture at the Imperial College of Science, South Kensington, on Thursday afternoon, April 10th, on the organization of a hospital for limbless cases. Speaking from his experience of the foundation and organization of the Prince of Wales Hospital for Limbless Sailors and Soldiers at Cardiff, he said that the principles governing the construction of such a hospital differed from those which obtained at general hospitals because the condition of the patients was different. The hospital at Roehampton, established in the middle of 1915, made history by beginning to work out the problem of artificial limbs by means of a new team of workers, consisting of the orthopaedic surgeon, the limb maker, the mechanical engineer, and the patient. The idea governing the organization of a hospital for the limbless must be to put the man while there under conditions which would prevail when he went to his own home; for instance, it was unnecessary and unwise to provide lifts. The hospital must have suitable training grounds for men with artificial legs, and for those with artificial arms. The need for proper provision for limbless men had been made prominent by the war, but it was one which had always existed in civil life, though its magnitude had not been generally appreciated. A census taken recently in Wales of civilians who had lost a limb gave the surprising result that they were in the ratio of 1 in 810; the census brought to light also the fact that, though the ratio was highest in the industrial districts, where it was 1 in 690, it was still as high as 1 in 1,023 in rural areas. The lecturer then gave an account of the organization of the Prince of Wales Hospital for Limbless Sailors and Soldiers at Cardiff, illustrated by lantern slides and cinematograph films. The hospital, he said, was entered not by steps but by an inclined plane; another inclined plane led into the garden, so that even a man who had lost both his legs could take himself into and out of the hospital in a hand-controlled wheeled chair. Such a man found his ward, with bathroom and lavatory attached, on the ground floor, and the dining-room and recreation-room were on the same floor, so that from the first the most severely crippled man enjoyed a certain amount of independence. The patient was admitted to an orthopaedic centre, either directly from the front or after a period in a general military hospital. At the centre he underwent such special surgical treatment, including operation, as might be necessary. At a suitable stage he was fitted with a temporary limb, the best type being a modification of the Belgian pylon. When he had learnt to keep his balance he went to a Red Cross hospital for practice, preferably in a hilly district; here he completed the second stage of his course of treatment and training. He was then ready to be admitted to the limbless hospital for the final stage, which was the fitting of the artificial limb. It was important to have workshops

on the spot, as in finally fitting an artificial limb, so that it should be thoroughly comfortable and useful, many small alterations and adjustments were necessary. In making these the man's own feelings must be consulted and his advice accepted. The first stage of the training in the use of an artificial leg was carried out in a parade hall, a long room with a terazzo floor, and two sets of parallel bars to suit men of different heights. The bars gave him confidence, and at the far end were mirrors, so that he could see for himself any error he made in his first attempts to walk, and was shown by an instructor how to correct it. If a man had lost both legs the preliminary stage must be longer. The difficulty such men found in getting into their artificial legs had been overcome by a special appliance, an "aërial transporter crutch," consisting of pulleys and tackle by which the man could lift himself from his wheeled chair into his artificial limbs. It was necessary for a limbless hospital to have an outdoor training ground in which a man could get accustomed to the variations in the pitch of roads and paths which pass almost unnoticed by a man with two sound legs. At the Prince of Wales Hospital, Cardiff, a miniature "Wild Wales" had been laid out to imitate the conditions existing in a land of hills and dales; it had rough stone paths, some on the level and others presenting gradients varying in pitch up to 1 in 3½. These paths were so laid that as the man walked the right foot was in one stretch higher than the left, and in another the left higher than the right. Men with artificial arms were also trained in "Wild Wales"; there were sand-pits for practice in digging and shovelling; and the use of an axe, hammer, and other tools was taught under the superintendence of an armless collier, the inventor of a most ingenious worker's arm which he had himself used successfully for over twenty years. A limbless hospital should also have an experimental workshop for testing the strength of apparatus and estimating the efficiency of new inventions and designs for artificial limbs of the upper and lower extremities.

Abdominal Wounds.

Mr. Cuthbert Wallace, C.B., C.M.G., gave a demonstration, at the Royal College of Surgeons, of specimens illustrating wounds of the abdomen. He began with some diagrams showing the position in which most wounds occurred. He showed also charts indicating the most dangerous wounds that reached a casualty clearing station and those that recovered without operation. Other charts were displayed on which were marked out the track of the projectiles that had passed through the abdomen without wounding any viscus. He then discussed the mechanism of wound production and the theories put forward to account for the difference of the wounds made by the same projectile. Next he pointed out that a few men had undoubtedly recovered without operation after having been wounded in the stomach or intestines. He also discussed the subject of wounded viscera without penetration of the abdominal wall. Next he referred to the so-called remote effects of high-speed projectiles, and advanced the view that they could nearly all be accounted for by the interruption of the blood supply. Finally he took each organ separately and demonstrated the lesions found, by means of the specimens in the College museum.

Skull Wounds.

On Thursday afternoon, April 10th, Professor Arthur Keith, F.R.S., gave a demonstration at the Royal College of Surgeons on the section of the War Office Collection, now exhibited in the museum of the College, which illustrates the effects of gunshot injuries of the skull. Professor Keith explained that he was merely acting as showman for the great company of medical officers who had made such a collection possible. Although the bulk of the specimens had been selected and forwarded by officers of the Royal Army Medical Corps, yet many valuable contributions had also been made by medical men belonging to Overseas Forces—particularly of the Canadian and Australian Medical Services. In the collection were to be found illustrations of all degrees of injury to the skull—from the almost complete miss or superficial tangential wound to the complete fragmentation which followed a direct central hit by a high-velocity bullet. The series which illustrated the effects of a grazing wound, one in which the missile did not actually touch the bone, was perhaps the most instructive. In such cases the external table of the skull might be perfectly intact or merely finely fissured and yet the internal table was comminuted, and even the dura mater torn and the underlying brain lacerated. All stages of healing of cranial wounds could be illustrated from the collection, so could specimens which showed the results of infection, particularly the formation and separation of sequestra. The lecturer was able to illustrate cases where bone had been successfully grafted to make good large deficiencies of the cranial vault.

War Injuries of the Eye.

A demonstration of specimens illustrating war injuries of the eye was given at the Royal College of Surgeons on Friday, April 11th, by Mr. W. T. Lister, C.M.G. A series of drawings showing the changes seen by the ophthalmoscope was displayed, as well as drawings of the "gassed" eye in the acute stage and in the stage of resolution. The specimens of eyes removed illustrated the results of penetration by small shell fragments, through-and-through wounds, suppurative conditions, ruptures of the sclerotic due to the explosive effect of foreign bodies, detachment of the retina, concussion changes such as dislocation of the lens and various haemorrhages, and evulsion of the optic nerve.

THE DOGS' BILL.

The terms of the resolution of protest against the Dogs' Bill, and the fact that it was passed unanimously in the joint meeting of the Sections of Medicine and of Preventive Medicine and Pathology and in the Section of Surgery, were recorded in our last issue (p. 456). In moving the resolution at the joint meeting,

Sir William Osler, Bt., F.R.S., said that if there was one thing more than another that the profession had to bank upon, it was that scientific progress came from investigation and experiment. It was not until experiment was added to observation that scientific medicine originated. All progress had been based on experiment. He yielded to no one in his love for the dog, but he had a still greater love for his fellow man. There should be a monument in every city to the ideal dog for the work which his kind had done in saving life by becoming the subject of experiment. The present proposals before Parliament were an unnecessary and inhumane obstruction to scientific work.

Lieut.-Colonel C. J. Martin, F.R.S., Director of the Lister Institute of Preventive Medicine, who seconded, said that he had sought for the reason why our legislators should be occupying themselves with a bill for the protection of dogs from imaginary abuses. The only explanation he found was that the bill arose out of a misapprehension of what was done with dogs in laboratories. The public should be acquainted with the truth by the profession. The public had an idea that the careful and faithful observation of patients during life and of their bodies after death was adequate for all purposes, and that experimentation was merely a luxury. The profession knew that this was not the case. Those careful and faithful observations had gone on for centuries; they were essential, but by themselves they merely provided a catalogue of the depredations of disease on the human body as seen from the outside during life and from the inside after death. It was still necessary to experiment. The dog was already safeguarded by legislation; in 95 per cent. of cases the experiment was conducted under complete anaesthesia

and the animal was not allowed to recover. He had not seen anything done to dogs in British laboratories that he would object in the least being performed upon himself if the choice was the lethal chamber.

Sir G. H. Makins (President of the Royal College of Surgeons of England), in supporting the resolution, said that the matter affected not only science but the technique of surgery. In the surgery of the vascular system the result of experiment had been to put the subject on a practical basis. Technique had been perfected by experiment in a manner otherwise not possible. It would be a disaster to interfere so materially as was intended with the progress of their science.

Colonel Haven Emerson, Medical Corps, U.S.A., who was in the chair, in putting the resolution, said that he had no right to discuss British legislation, but this bill, if passed, would have its repercussion in other countries; it would hearten those mischievous people, supported by large endowments, who were pursuing the same object in his own land. Resolutions were not enough; they must be followed up by personal propaganda; doctors must tackle their representatives in Parliament. Let them also in their own practices get hold of and convert the individuals who had received some benefit as the result of the sacrifice of a dog's life; make these individuals appreciate the fact and publish it. When they gave an injection of diphtheria antitoxin, when they made a successful operation, then was the time to win that family permanently to the cause of experiment. The small group of devoted and self-sacrificing experimenters must not be allowed to bear the whole burden; it must be shared by the whole profession.

As already stated, the resolution was carried unanimously, and a resolution in similar terms was at the same time carried unanimously in the Section of Surgery. The resolution on this subject adopted unanimously by the Royal College of Physicians of London on April 14th is printed at p. 503.

THE MEDICAL WAR MUSEUM.

ONE of the most enjoyable exhibitions of the Association meeting was that in the Art Section of the Army Medical War Museum, at present housed in the studios at 76, Fulham Road. Lieut.-Colonel F. S. Brereton, who is engaged in the medical history of the war, is to be congratulated on securing the services of a brilliant company of young artists who have all served in the ranks of the Royal Army Medical Corps, and thus have inside experience of what they illustrate. It is well to know that these artists have gone through the comparatively menial work of stretcher-bearers or hospital orderlies, and have now been promoted to the rank—and pay—of sergeant. Gilbert Rogers, the well known Liverpool portrait painter, now commissioned as a lieutenant, is in charge of the studios and workshops. The exhibition consists of oil paintings, water colours, and pastels, illustrating the work of advanced dressing stations, field ambulances, casualty clearing stations, and general hospitals, and of plaster models and casts. Not only have these exhibits an educative value, but they are of considerable artistic merit. Lieutenant Rogers has a powerful study of "The R.A.M.C. at Passchendaele during an attack," showing the bearers and medical officer at work, a drawing that will convey to those who have not experienced front line work more than pages of description; his "Dead Stretcher-Bearer" is a haunting, poignant memory. George Pirie, A.R.S.A., exhibits paintings illustrative of methods of transport which gave him full scope for his speciality of animal painting; his "Mud Sledges in Flanders" is, perhaps, the best bit of work in the exhibition, and is a good example of what his gentle, sympathetic style can get out of prosaic material. The plaster casts of Benjamin Clemens the sculptor would alone repay a visit to the museum; his humorous and understanding study of the head of "An Orderly," the realistic and yet artistic illustration of "The Pick-a-back," and the careful modelling of the "Camel-Cacolet" will conjure up to many a one memorable scenes of the war. A word of praise must be given to Edwin Martin, who, though a landscape painter, has turned his hand to the production of panoramic models of regimental aid posts with their shell-torn surroundings, and to the construction of such inartistic things as refuse destructors and drying sheds. A large number of pastels illustrating the history of a wounded man and many studies of hospital scenes are contributed by Austin O. Spare, the editor of *Form*, and though pastels seem to be a new medium for him, yet his success is unmistakable. David A. Baxter has caught the atmosphere of the forward area; his landscapes in water-colour have a charm and an individuality of their own; the "Wounded Poilu" may be picked out as of special merit. Amongst the several exhibits of J. Hodgson Lobley there is an arresting picture of "No. 41 C.C.S. at Roiselle," where the convoys of wounded have just arrived at the admission ward. H. R. Mackey, M.M., late of the 36th Field Ambulance, found time from his military duties to make studies of the fighting man and the refugees; the "Dressing Station at Flines" is an excellently painted, peaceful episode in the midst of war. From the same ambulance we have several beautiful water-colours by W. E. Spradbury, D.C.M., notably a series of drawings of Maillet-Mailly, that are reminiscent of this artist's decorative poster work, so familiar to the Londoner who travels by the Underground. Where the permanent home of this unfinished collection may be is not yet known, but a visit to the studios in Fulham Road is well worth the while.

"THE LANCET."

ON Friday, April 11th, the Editor of the *Lancet* entertained at luncheon, at the Hyde Park Hotel, a party of some fifty guests, including many of those who had taken an active part in the preparation and in the actual work of the meeting. Among those present were Sir Clifford Allbutt, President of the British Medical Association, Dr. Norman Moore, President of the Royal College of Physicians, Sir George Makins, President of the Royal College of Surgeons, Sir W. H. Norman, Medical Director-General R.N., Sir John Goodwin, D.G. A.M.S., Major-General M. Fell, Medical Administrator R.A.F., Major-General G. Foster, D.G. C.A.M.C., Sir William Osler, Sir David Ferrier, Sir Havelock Charles, Sir George Newman, Sir Robert Morant, Sir Bertrand Dawson, Sir Robert Jones, Sir Humphry Rolleston, Sir Wilmot Herringham, Sir Walter Fletcher, Dr. J. A. Macdonald, Dr. G. E. Haslip, Dr. Cox, Mr. Maynard Smith, C.B., and Dr. Gordon Holmes (secretaries of the meeting), Colonel J. G. Adami, F.R.S., and the Editor of the BRITISH MEDICAL JOURNAL. Dr. Norman Moore and Dr. Dawson Williams briefly expressed the thanks of the company to the *Lancet* for the hospitality shown, and Dr. Squire Sprigge briefly responded.

HOSPITAL PLANS.

THROUGHOUT the meeting there was on view in the library of the Imperial College an exhibition of plans and drawings of cottage hospitals, lent for the occasion by the several architects. Plans were also displayed of military hutted hospitals, including the Ontario Military Hospital of the C.A.M.C. at Orpington; the Canadian Red Cross Hospital at Joinville, Bois de Vincennes, Paris; and the St. John Ambulance Brigade Hospital at Etaples. The plans of the last named hospital were supplemented by interesting photographs showing the general arrangement of the camp, and the effect on ward huts of the disastrous air raids which took place last spring and summer.

THE ASSOCIATION DINNER.

On Thursday, April 10th, some 350 members of the Association and guests assembled for dinner at the Connaught Rooms. Service uniform was very much in evidence, and a large number of ladies were present. The President of the Association, Sir T. Clifford Allbutt, K.C.B., F.R.S., occupied the chair, and among those beside him were Lord Gorell, Sir Henry Craik, M.P., Sir Philip Magnus, M.P., Sir Robert Morant, Sir Walter Fletcher, Dr. Norman Moore, President of the Royal College of Physicians, Sir George Makins, President of the Royal College of Surgeons, Sir Humphry Rolleston, President of the Royal Society of Medicine, Dr. Dawson Williams, Dr. Alfred Cox, and the following members of the Services: Sir W. H. Norman, Medical Director-General, R.N., Lieut.-General Sir John Goodwin, D.G. A.M.S., Lieut.-General Sir C. H. Burtchaell, D.G. M.S., France, Major-General Sir N. R. Howse, V.C., D.M.S. A.I.F., Major-General C. la F. Foster, D.G. C.A.M.C., Lieut.-Colonel Bernard Myers, N.Z.M.C., Colonel P. G. Stock, S.A.D.F., and Major-General M. H. G. Fell, R.A.F., together with Colonel Haven Emerson and Colonel A. M. Whaley of the Medical Corps of the United States Army. In the course of the evening Dr. Addison, President of the Local Government Board, paid a brief visit in order to convey to the gathering the greetings of the Government.

The Success of the Clinical and Scientific Meeting.

The President, after the toast of "The King and the President of the United States" had been honoured, made a few observations upon what he described as an extremely successful meeting. He had visited all the sections, and had been to as many of the demonstrations as it was possible to cover in an afternoon. The extraordinary difficulty of London travel had militated against the fulfilment of his afternoon programme. He had supposed that the ubiquitous taxi would carry any one anywhere, but London taxis were now like the meteorites which appeared in the spring and autumn sky, and flew about in all directions in entire disregard of the human beings in their eccentric path. But he had seen enough of the Clinical Meeting to say that never before had he known in any concourse such thorough earnestness and businesslike determination. It had been impressive to see the scientific enthusiasm displayed. The sectional meetings were very full, the audiences highly interested, and the discussions of a high quality. It had been a great advantage so to order the programme as to concentrate attention upon single and definite subjects. No doubt the circumstances of the time had lent special interest to the discussions, but he was inclined to think that it would be well to endeavour to secure a similar concentration in future meetings, so that the whole strength of the Association might be thrown for the time being into certain specific channels of research and observation; this would be likely to result in more progress than desultory discussions over a large area of subjects.

The Medical Services of the Navy, the Army, of India, and the Air Force.

Sir William Osler, in proposing this toast, said that he approached the task with no little trepidation, because he had never before spoken in the presence of so many ladies. If there was one person more than another of whom he stood in dread it was the doctor's wife! Turning to the toast of which he was in charge, he said that, the tribute of deeds having been paid, the tribute of words in return must be inadequate. War as his colleagues had seen it was hell; no one saw war as the doctor did except the nurse. He knew what the men of the medical services had been through during the past four years, and how colossal had been their task—that of providing a citizen army with a thoroughgoing medical service. It had been no easy job, and the men in charge of it had been criticized and criticized unjustly. He had been asked what in his opinion was the chief single triumph of the army—the one outstanding event and achievement on the medical side. He had replied that it was not the way in which wounds had been dealt with, the sanitary dispositions, the measures taken to meet new diseases, such as trench fever. The chief triumph had been that for the first time in history a great war had been fought without the great killer: enteric was controlled. Their hearts were full of gratitude to a number of people as they honoured this toast, first of all to the men who, long before this war was thought of, organized the Territorial forces and their hospital services. If there was one man more than another who deserved credit in this connexion it was Lord Haldane. How much they owed also to Sir Alfred Keogh, and how lucky he was to get out of his job alive! That evening they welcomed his successor at their board. It was one of the nicest things he knew that Sir John Goodwin had at last succeeded in inducing the War Office to add to their coat-of-arms—a pair of scissors, to cut red tape for ever! He could say nothing that was adequate as to the work of the nurses. Words would fail any man to describe the labours and courage of those women. A procession of the Guards in Piccadilly would not particularly appeal to him, but he would like to see the nurses from the casualty clearing stations marching through that thoroughfare. And, last of all, how could they be grateful enough to the men who had died for them? They were many. They gave their lives. They were immortal.

Sir William Norman, Director-General of the Medical Department, R.N., returned thanks for the four services. One of these days, he said, they would be all one service—an Imperial Medical Service. The war had revealed a considerable amount of overlapping in the medical services, and it would be to the advantage of everybody if they were combined. He wished to express gratitude to the civilian doctors who gave up their practices and joined the services, and in a great many cases lost their lives. Without their assistance the services would have done little or nothing. They of the services had made mistakes, but, taking it all round, they had not come out so badly. (Applause.)

The Overseas Medical Services.

Dr. Norman Moore proposed the toast of "The Overseas Medical Services." How very little, he said, they in England who had not travelled much abroad knew about the colonies, and what wonderful places they were! While talking with Colonel Myers of New Zealand he had been reflecting upon the strange history of those islands in the southern seas, once inhabited only by birds, without a single quadruped or man, until a canoeful of Papuans made their way to the strange coasts and invaded the avian republic. Then came Captain Cook who sailed round the islands of New Zealand. Cook also came upon a coast which reminded him of what he had seen in the Bristol Channel, and so he named the country New South Wales, and that brought the speaker to the second country of which, in proposing this toast, he had to remind them. He remembered as a boy meeting an old gentleman who had dined with Sir Joseph Banks, the naturalist of Cook's expedition. Another old gentleman with whom he had been associated could remember when the whole of South Africa was covered with antelopes, and how one night, while camping out, he saw a herd of twenty white rhinoceroses. And this same old gentleman said that when he was lonely or depressed he used to think of the whole of North America covered with bison! The war had taught the old country much about her colonies, had given her a new admiration for her children who had come from far to meet her enemies in the gate. He coupled with the toast the names of representatives of the medical services of Canada, Australia, New Zealand, and South Africa.

Major-General G. la F. Foster, D.G. C.A.M.C., recalled that it had been said of Canada that she was daughter in her mother's house and mistress in her own; and that expressed the sentiment with which Canadians came to the war—they came to assist the mother. And no mother ever welcomed a child more gladly, and no part of the welcome could have been kinder than that of the Royal Army Medical Corps and the British medical officers generally. Sir John Goodwin and his predecessor, and, in France, Sir Charles Burtchaell and his predecessor, had extended to them from the first the utmost kindness. He proceeded to give an idea of army medical progress in Canada. The regular service before the war consisted of 20 officers, 8 nursing sisters, and 74 other ranks; and within two years, thanks to the ready response of the civil medical profession in the Dominion, they had sent over 800 medical men into the Royal Army Medical Corps; they had 2,500 medical officers in the field and in England, and

upwards of 3,000 nursing sisters. Now that the war was over they from Canada were going back to their own country to work out their own salvation, but the experience they had gained over here and the help and kindness they had received would have an abiding impression upon the future of the Dominion.

Major-General Sir NEVILLE HOWSE, V.C., D.M.S. A.I.F., endorsed everything that General Foster had said about the treatment the overseas men had received in the old country. If the dominions had not come to assist those who had brought them up, and who, through the navy, had protected them for the last 110 years, they would indeed have been most ungrateful children. It was perfectly natural that they should come, as they came to the South African war. The medical profession in Australia had probably made greater sacrifices than any other portion of the community, although they might not have lost the same percentage of lives. Amongst the Australians one in every five and a half men had given up his life for the great cause—the highest death-rate of any force entering the war. In their pride of small-nationhood they liked to call themselves allies, and he thought that in any future warfare, so far as the medical services were concerned, it would be as allies that they would come, unless, indeed, in making an imperial army, an imperial medical service was set up also, for it was quite clear that better use could have been made of the medical material had it been pooled, so that the best brains could be used in the most fitting positions. It was well known, even in their profession, that if anyone attempted to fill three or four different positions he generally failed, and although it was considered that once they had become soldiers and joined the medical service they were able to do anything, his experience was that this was not the most efficient way of going to work. Therefore he hoped there would be an Imperial Medical Service. For thirty years they in England had fallen down and worshipped the clinician while neglecting the preventive side of medicine. Could they learn one further lesson from the examination of so-called healthy men, many of them first-class insurance lives, who, nevertheless, in an enormous percentage were unfit for military service? The cause of this was largely the slightness of interest in and of control over the health education and physique of the nation. He took it that the English army was the most perfect in the world at the present time save in one respect—the dentistry was in the dark ages. It was inconceivable that the war should have been going on for four years and the dental services be in the condition in which they were to-day. The conditions were pitiable, but no worse in the army than in the general community. In concluding, he paid a grateful tribute to the kindness of the British people.

Lieut.-Colonel BERNARD MYERS, N.Z.M.C., said that New Zealand had felt it a great privilege, at the call of the war, to join the forces of the motherland. New Zealand had sent altogether 100,000 men out of a population of 1,200,000. On the last day of the war the New Zealand medical establishment consisted of 250 officers and some 2,000 orderlies. Nineteen medical officers had been killed. Like Australia, New Zealand had her own hospital ships, staffed by her own medical officers, orderlies, and nurses. He had to acknowledge the constant courtesy they had received on this side, from all departments of the War Office, from Sir Alfred Keogh and the present Director-General, and particularly from the D.M.S. Embarkation, who had never lost an opportunity of doing them a kindness, with the result that all the evacuations went through with the greatest ease. He hoped that some day his colleagues in Great Britain would visit New Zealand, where they would receive the heartiest of welcomes.

Colonel P. G. STOCK, C.B., D.D.M.S., South African Defence Force, said that one of the great features of this war was the way in which it had thrown men into contact. He appreciated enormously not only meeting the people of this country, but also the Canadians, Australians and New Zealanders, and the Americans. Was there no possibility of the meetings of the Association taking place in the Dominions? The journey thither, thanks to the Air Force, might be greatly accelerated in the near future. Should the Association at any time decide to come to South Africa, the South Africans would try to make up by the warmth of their welcome for what they might lack in clinical interest. He hoped that the friendships made in the war would be something more than pleasant remembrances. Demobilization was proceeding apace, and the South African men would shortly be scattered from the Cape to the Zambesi. But whether under the shadow of Table Mountain or on that illimitable veldt, they would often be thinking of their friends in England.

GREETING FROM THE GOVERNMENT.

At this point the PRESIDENT introduced Dr. Addison, remarking that the President of the Local Government Board was one of the greatest friends of the medical profession, and he hoped he might say that that meant that he was one of the greatest benefactors of the British public.

Dr. ADDISON, who was warmly received, said that he came to express to that great gathering, which had been brought together by the British Medical Association and was representative of the dominions and of our great ally, respectful and cordial greetings, and to say how much the Government felt that it owed to the Association and to those who had come together now in London to exchange views and to collect and focus the lessons of the war. He had further to say that the Government hoped to derive great benefit from the counsel which the Association would afford, for, as they all understood, it behoved the country to make use of the lessons of the war, and they were endeavouring at the present time to provide machinery through which they might invoke in a regular and systematic manner the best advice and help of the medical profession. The Government of this country had not always been popular with the medical profession—it was not the lot of Governments to be always popular—but he could say this, that now the Ministry of Health Bill would almost certainly be law in a few weeks' time, they had an unexampled opportunity of helping one another in promoting public and personal health, and the Government intended to do all it could to invite and to receive the assistance of the profession. He was glad to be charged with that message to this most important gathering. He trusted that the training in co-operative effort which all must have received would in some way still be utilized for the benefit of the people at home. Many of the lessons of the war could be used to the advantage both of the medical profession and of the public, and as the man who would probably be responsible for the work of the Ministry of Health, in the early months if not longer, it would be no fault of his if the Government did not receive the hearty assistance of the profession. He hoped that the Clinical Meeting, if the first, would not be the last of its kind with the object of gathering up and applying further the lessons of the last four or five years. In the early days of the war he was associated with others in starting an organization designed to collect together the medical histories and statistics of the war. Some time ago he saw the mountains of cards and the tons of paper which had been collected, and he wondered who would be fortunate enough to extract therefrom the lessons that really mattered. The man or woman who could do it would be possessed not only of much patience but of uncanny skill, and he wished well to him or her; he knew that no pains or forethought had been lacking to secure that the medical records of the war were preserved and made accessible. He felt sure that the dominions would co-operate in this task as they had done in the struggle itself; and in the presence of officers of the United States, he could not forbear saying how often he had envied the facility with which on the other side of the Atlantic they had managed to deal with statistical records and publications so as to make them interesting and easily grasped. He thanked Sir Clifford Allbutt for the privilege which had been afforded him of making those few remarks.

THE UNITED STATES MEDICAL SERVICE.

Major-General Sir BERKELEY MOYNIHAN, K.C.M.G., C.B., in proposing this toast, said that America during her independent history had waged three wars under three great presidents. She had fought always for one reason; she had achieved always one result. She had fought always for freedom; she had always attained victory. In her first war under Washington she fought not, as they had been told for generations, against England, not against an enlightened democracy, but against a German autocracy, represented by a German English king. In her

second war, under Lincoln, she fought, unhappily, within herself, to decide who should rule in her own house. In her third war, under Wilson, she fought to destroy German tyranny. In her first war she won freedom for America; in her second war, freedom in America; in her third war she had striven with us to win freedom for the whole world. The first shock of the war was borne by France and England, and only a distant reverberation was felt across the Atlantic, but as infamy was piled upon infamy America realized that not only the interests of Europe but the interests of civilization were in jeopardy, and then, with an enthusiasm which overcame all obstacles, she called her sons to arms and trained them to fight over in Europe by our side. America and England in moments of expansion and emotional enthusiasm occasionally spoke of one another as cousins, but "he to-day who sheds his blood with me shall be my brother." He looked for a fraternal union with America: political union and commercial union they might never have, but this union was an affair of mind and heart. There must be broader opportunities for intellectual traffic between the two countries. We had the same ideals, the same love of liberty and justice and progress. To this "marriage of true minds" there could be no impediment; and already the incorrigible matchmakers were at work in the shape of the United States medical service and our own and the professions of the two countries. When in the hour of our most urgent need an appeal was sent across to America it was answered instantly and cordially, and hundreds of young American medical officers were sent over to this side to help in the work that was being done in our hospitals. At this moment America had far more friends in England than she had ever had before. He was confident that every returning American soldier would be an ambassador of affection. When America entered the war one of her first acts was to request that somebody from our medical service should be sent over to Washington to help in the creation, administration, and training of that large medical service which it was known would be required. The wise choice fell upon the present Director-General. Of the results of his work it was neither timely nor appropriate to speak, but one result was an increase of the affection which many in America had for England, her customs, methods, and ideals. Among the great men of the United States medical service whom he would like to mention were Surgeon-General Gorgas, who was born with all the qualities of greatness and acquired greatness during a most distinguished career, a man who had the strongest grip in the softest hand of any man the speaker ever knew; his successor, General Ireland, and, to mention yet another name, Franklin Martin. The work which these men and others had done in assisting fraternal union should be looked upon as a foretaste, a beginning, an incentive. The bond might be strengthened by the interchange of professors and of students, and more frequent meetings in common which it would be a real obligation to attend. But it could only come about if they had faith in it. American and British boys were lying in death together in France. Men did not willingly sacrifice their lives in multitudes for material ends, but only for the things of the spirit. Therefore it was for those who remained to discard unworthy doubts and to believe in, and work for, something like an alliance between the two countries, which would be good not only for America and for England but for the whole world.

Colonel Haven Emerson, M.C. U.S.A., said that it would need more than an orator, it would need a historian, a statesman, to reply in fitting terms to the toast proposed by Sir Berkeley Moynihan, and it would take the thousand voices of their men in war to express the feelings which he himself could only feebly repeat. Never was there such a time for service. Never did service seem so easy, however heavy the burden. Never did the peoples of the world seem more worth serving than in the last few years. Were they not each of them saying, "I was born in the very nick of time"? Who would not rather live just now than at any other period in the history of the world? There were only 270 medical officers with more than three years' military experience who had served in France in the American expeditionary force; something less than 1,000 medical officers, mostly of the reserve, served with the British behind the lines or in the hospitals, and 12,000 others had had to be trained for the medical service of the army. These were recruited from the ranks of private practitioners, and a vast change had to come, not only over their outward circumstances, but over the spirit in which they approached their duties. Instead of waiting until somebody came and said, "I have such and such a sickness; give me such and such a medicine," they had to go out and discover who was sick. The man who was most responsible for this change at the beginning was the first ambassador from the British service, the present Director-General, who came with a distinguished group of men to give exactly the welcoming and stimulating word that was needed. None of those who were present at their receptions would forget the impression. The inspiration that followed spread at once to the camps of the country, and helped to make the period of training one of vigour, excitement, and anticipation. The speaker went on to pay a tribute to the quality of field sanitation of the Royal Army Medical Corps, and quoted a letter received from a regular army officer who had come over with one of the first hospitals in May, 1917, and went to the Rouen base.

> I learned (he wrote) the value of simplicity of installation. I saw perfect policing of camps. Flies were almost unknown, in spite of the presence of three thousand horses stabled adjacent to the hospital. Drainage, grease-saving, destructors, dryers, were efficient to a degree unknown to us. Resourcefulness, initiative, cleanliness, orderliness, and everywhere a standard of living that opened the eyes of the most self-satisfied Yank to the possibilities of a salvage dump and the uses of petrol and biscuit tins. The wild Americans were also impressed with the discipline maintained. Hospitals with 1,500 beds were operating in space we demanded at home for 300, and with a simplicity of equipment that was a revelation to us. The evacuation system was a marvel of perfection. Everywhere one saw and felt the incomparable loyalty of the British "Tommy." His confidence in and respect for his officer expressed an ideal relationship, and proved the reasonableness of the discipline. Everywhere a moral that seemed born in the men rather than acquired. Nothing could bind men together more strongly than the experience of our service in the B.E.F. As well as the personal and professional pleasure from our British experiences, we gained a training which served in good stead when officers were sought for to establish hospital services in the A.E.F. British methods, devices, rules of service, procedures were taken over direct to our own hospital units, to the great advantage of the economy of labour and of the quality of medical care given to our sick and wounded.

Colonel Emerson went on to say that his own service could not but follow the example which had been set, both as to organization and research, and also the keeping of records; their business was to make statistics vital instead of collecting vital statistics. It was his privilege to speak—and he did so from the bottom of his heart—for every unit of the service in expressing thanks to the men of the medical service in England and her colonies. Various speakers had commented upon the atmosphere of the sessions at that meeting, the seriousness of all concerned, and the absence of that boredom which sometimes made its appearance at medical gatherings. All the men seemed to be freed in the white heat of this emergency from the trivialities of discussion. They had been considering questions, not of priority, but of fact. There was among them a serious determination to make progress, to make it promptly, to apply the results at once to the life with which they would have to do. Mankind had struggled over rights of property and possession; very largely it had been those which had determined war; it was now their duty to see that the health right of the people was protected as well as the property right. The experiments which had been made in military camps with regard to the relation between overcrowding and disease were a most valuable argument for the housing reformer and the civil officer of health. One war experience which had been learned was the need to put nervous disorder—war neurosis—in the class of communicable diseases. It was so treated in the American forces on the advice of the psychiatrists and neurologists, with the result that only 1 per cent. of all the cases that presented themselves at the clearing stations had been returned to the United States as incapable of military service. The Americans had learned from the British the value of hospital centralization and single control, and the same applied to the laboratory service. In fact, the British service had been most generous in telling them of its own early mistakes and failures, so that they had not to waste time by going over the same ground. He envied the profession in Britain this Ministry of Health, and in particular among British legislative

activities he praised the action of Parliament which put research on the taxpayers. The establishment of a Research Committee was the greatest guarantee of medical progress that had been recorded in any country, and it was inconceivable that any legislative body which put that law upon the statute book could consider for a moment this amazing concoction of anti-humanitarianism which was now before Parliament—the Dogs' Bill (hear, hear). In concluding an eloquent address Colonel Emerson said that many visions and expansive ideas came into the mind, but the thing first of all to be considered was Carlyle's advice—to do the duty which lies clearly next to hand. It was inevitable that the profession would have to bear the burden of recreating a health organization which should be as good for the civil population as the one which it had created for the army.

THE BRITISH MEDICAL ASSOCIATION.

Sir G. H. MAKINS, G.C.M.G., C.B., proposed "Continued success to the British Medical Association." The Association, he said, was a many-sided body whose activities had been exerted not only on behalf of its own members but on behalf of the profession and of medicine at large. It had done much for the profession from the social point of view; by meetings such as the present, and by the establishment of its Branches, not only over the whole of the United Kingdom but in the Dominions, it had rendered enormous service by simply bringing the members of the medical profession together. It had helped to create the brotherhood of the profession all over the world. Then the Association had been a foremost power in developing research, and there were few members of the profession devoting themselves purely to medical research who had not benefited from its grants in aid. It had helped to diffuse medical knowledge not only by its meetings but by its JOURNAL, which kept them all cognizant of what was going forward. It gave every member of the Association and the profession the opportunity of publishing what he was doing, and from time to time the JOURNAL acquainted them with work done in all parts of the world. As to the political activities of the Association, it had had to undertake matters upon which the profession as a whole was not agreed, but it was hardly possible for a profession to be unanimous as to any course of policy. The Association had worked honestly for the good of the profession. He instanced the work of the Central Medical War Committee, which could not have been done, at any rate so effectively, under any other aegis. He would say to the critics, "Come into the Association, and there you will have an opportunity of exerting your influence if the Association is doing what is not good, and of helping it if it is." That was the only way in which the dissentients could make themselves useful, so far as he could see. Nothing was more remarkable than the opening of the pages of the JOURNAL to the Association's critics. The debt to the Association was made greater by the present successful meeting which it had organized, and which would be a red-letter meeting in its annals.

Dr. J. A. MACDONALD, LL.D., Chairman of Council, who responded, said that it was one of the objects of the Association to bring about the imperial unity of the profession suggested by Sir Neville Howse. It was his lot a few years ago to visit the Branches in the Overseas Dominions, and he found that even then the imperial medical idea was at work. He explained why the present meeting had been held. It was the custom of the British Medical Association to hold a scientific meeting in July, but on this occasion it seemed likely, owing to the sudden cessation of hostilities, that visitors from the Dominions and the United States would be departing before that date. He was certain the meeting would prove one of those happy events which sometimes issued out of disasters such as war. The Association had scored a distinct triumph in bringing about such a meeting, and he wanted to thank the visitors from across the seas who had assisted so materially in promoting its success, and in particular Colonel J. G. Adami of Montreal, who had been chairman of the committee which arranged the programme of business of each section. The Association was a powerful body. It was consulted by members of the Government on many occasions, with advantage to the Government and possibly with advantage to the profession, but with an advantage to the profession which would be all the greater if the Association could speak for a united profession. There was no reason why it should not include within its ranks every medical man. Before concluding he particularly wished to mention one who, owing to his modesty, was often left in the background—the Editor of the BRITISH MEDICAL JOURNAL. It was to him that the inception of this meeting was due, and he hoped that the medical profession throughout the country would be made aware of the fact. They were greatly indebted also to the secretaries, Mr. Cuthbert Wallace, Dr. Gordon Holmes, and Mr. Maynard Smith, and with these names he wanted to include that of Dr. Alfred Cox. (Applause.)

Medical Notes in Parliament.

Grants to Universities and Medical Schools.—The Civil Service Estimates for the year ending March 31st, 1920, contain an item of £500,000 for special grants in aid of certain universities, colleges, medical schools, etc., to assist them to re-establish their work on a basis of unimpaired efficiency. The grant for the year 1918–19 was £30,000, so that the increase is £470,000. In an explanatory note it is stated that certain of the universities, colleges, and other similar institutions which are in receipt of parliamentary grants are in need of special assistance in order that they may, as far as possible, resume their full work under favourable conditions, and may not be hampered by extraordinary expenditure involved by the prolonged interruption of their activities and development caused by the war. The special grants in aid for 1918–19, amounting to £30,000, were provided to meet particularly urgent cases in which some measure of assistance could not be delayed until the conclusion of hostilities without risk of grave permanent detriment to the institution concerned. The estimates do not state the manner in which this grant of half a million will be distributed and to what extent the several universities, colleges, and medical schools will severally benefit. This grant of half a million is in addition to the grants in aid of the expenses of universities and colleges in the United Kingdom and of the expenses under the Welsh Intermediate Education Act. These grants amount to £916,000, which with £84,000 provided under another head, will raise the total amount of these grants to one million. This is a net increase of £527,000, which is wholly accounted for by an additional grant of £531,500 to universities and colleges in the United Kingdom. The difference between this amount and that stated as the net increase is accounted for by a diminution of £5,000 in the grant to colleges in Great Britain. The universities and colleges and other institutions will not be required to account in detail for the expenditure of either of the grants, nor will any unexpended balances be surrendered by the payees at the close of the financial year.

THE DOGS' PROTECTION BILL.

The Dogs' Protection Bill, also called a Bill to Prevent the Vivisection of Dogs, now stands as the first order for further consideration on report in the House of Commons on Friday, May 23rd. Originally a Trades Dispute Bill, backed by the Labour Party, had the first place on that day, but as the Government has announced its intention to propose legislation as to trades disputes the Labour Party has withdrawn its bill.

As was stated last week, no progress was made with the Dogs' Bill on April 4th when it came before the House of Commons on report near the end of the sitting. The Under Secretary for the Home Office (Sir Hamar Greenwood) proposed an amendment to leave out the following words in Clause I: "and no person or place shall be licensed for the purpose of performing any such experiments," and to insert the following: "except on such certificate being given as is mentioned in the principal Act, stating, in addition to the statements required by Section 3 of that Act to be made in such certificate, that the object of the experiment would necessarily be frustrated unless it is performed on a dog and that no other animal is available for such experiment."

A further notice of amendment by Sir Hamar Greenwood proposes to alter the title of the bill so that it shall be described as one "to impose further restrictions on" instead of "to prevent" the vivisection of dogs. A number of amendments have been put down also by private members.

Sir John Butcher asked on April 10th whether it was the practice of the Home Office, upon certain certificates being obtained, to allow experiments on dogs, in which the dog was kept alive after experiment until the main object had been attained, although the dog was found to be suffering from severe pain or pain that was likely to endure. Sir Hamar Greenwood, Under Secretary for the Home Office, said that

experiments were allowed under these conditions on proper certificates as required by the Act, but the further condition was added that if the animal was suffering severe pain which was likely to last, it must at once be painlessly killed, whether the main object of the experiment was attained or not.

Sir J. Butcher then asked whether he was to understand that if an animal was suffering temporarily severe pain, or was suffering considerable pain likely to last, it would not be killed unless the object of the experiment is attained? Sir H. Greenwood said that that was not to be understood, and asked that supplementary questions should be put down, as the words Sir John Butcher had used were capable of more than one interpretation.

Sir John Butcher then asked whether there would be laid on the table a copy of the licence issued in cases where an operation was performed without anaesthetics or where a dog or another animal was allowed to remain alive after an operation.

Sir H. Greenwood said that any member of the House could have a copy of the licence issued generally, but with reference to the specific licence he would have to consult the Home Secretary. Mr. R. Gwynne asked who was the judge of whether the animal was suffering severe pain likely to last, and Sir H. Greenwood replied that there might be several persons to judge —among others an inspector of the Home Office.

Sir John Butcher then asked the total number of experiments permitted to be made on dogs in 1917 in which the experimenter was permitted to perform the experiment without anaesthetics, and the total number of experiments performed on dogs in 1917 in which the experimenter was permitted to keep the dog alive after it had recovered from the anaesthetic. Sir H. Greenwood said: I cannot answer this question as regards dogs alone. The same certificates are required under the Act for cats as for dogs, and therefore the returns do not distinguish them. The number of experiments of the first class mentioned in the question performed in 1917 was 887; the number of the second class was 147. In the majority of these cases cats were the subjects of the experiments.

Lieut.-Colonel Guinness: Were not the large proportion of these 887 cases mere inoculations of infection, with no cutting of any kind?—Sir H. Greenwood: That is so.

Sir J. Butcher asked that in the next return the figures for dogs and for cats should be given separately, and Sir H. Greenwood said that under the present Act he could not promise to do so. If Sir J. Butcher would support the amendment down in his (Sir H. Greenwood's) name to Sir F. Banbury's bill, and it was passed, he thought that it would be possible. Lieut.-Colonel Guinness: Could not a distinction be made between experiments of inoculation with infection and experiments involving cutting, which are now all lumped together?—Sir H. Greenwood: If the amendment standing in my name is accepted, I think I can promise that also.

Scottish Board of Health Bill.—The Scottish Board of Health Bill was further considered on report, and read a third time in the House of Commons on April 10th. The Secretary for Scotland (Mr. Munro), in accordance with undertaking, moved an amendment similar to that proposed by Dr. Addison in respect of the English bill. The effect is that the powers possessed by the Board of Education as to medical inspection and treatment of children are to be transferred to the Board of Health, with the qualification that the Board of Health may, on schemes being submitted to them, delegate administration to the Board of Education. Mr. Munro repeated, on third reading, that the new Parliamentary Under Secretary for Scotland to be appointed under the bill would devote his energies entirely to health questions, spending as much time as possible in Edinburgh.

The Nurses' Registration Bill.—The Nurses' Registration Bill was passed through Standing Committee of the House of Commons on April 8th, under the chairmanship of Mr. D. MacMaster, K.C. No material alteration was made, save that it was agreed that the number of members of the council should be increased by one to give a representative for Wales.

Army Nurses.—In reply to Major M'Lean, Mr. Forster said that steps had been taken to meet the case of nurses who arrived in England on demobilization penniless. He hoped to make an announcement shortly with regard to the granting of gratuities to sisters of the nursing services and voluntary helpers. He added, in reply to Major Courthope, that the question of extending to nursing sisters retained on services overseas similar increases of pay and other advantages which were to be granted to the Royal Army Medical Corps with whom the nursing sisters were working was receiving consideration.

Health Visitors.—Sir Henry Harris asked on April 10th whether the President of the Local Government Board proposed to issue an order prescribing the qualification and salaries of health visitors. Dr. Addison said he had the subject of training qualifications and duties of health visitors under consideration, and would be happy to receive suggestions from him. He had already invited suggestions from a number of representative persons.

Prevention of Anthrax Bill.—Sir Hamar Greenwood (Under Secretary at the Home Office) introduced, on April 14th, a bill to control the importation of goods infected, or likely to be infected, with anthrax, and to provide for the disinfection of any such goods.

Ireland.

THE MINISTRY OF HEALTH BILL.

THE Ministry of Health Bill, as it left the Commons on April 10th, contained a clause (10) constituting the Chief Secretary as a Minister of Health for Ireland, and providing for the appointment of an Irish Public Health Council to give advice and assistance and make proposals to the Chief Secretary. The bill directs that the Council shall consist of:

(*a*) The Vice-President and the two other Commissioners of the Local Government Board for Ireland; (*b*) the chairman and such two others of the Irish Insurance Commissioners as may be nominated by the Chief Secretary; (*c*) the Registrar-General of Births, Deaths, and Marriages in Ireland; (*d*) a registered medical practitioner, who shall act as chairman of the council under the direction of the Chief Secretary, and three other registered medical practitioners, one of whom shall be a woman and one of whom shall be a medical practitioner who is registered on the *Medical Register* in respect of a diploma in sanitary science, public health, or State medicine; (*e*) six other persons having practical experience of matters relating or incidental to or affecting the heath of the people.

The Chief Secretary would appoint a chairman and also the members enumerated under (*d*) and (*e*). There is provision also for the payment of a salary to the Chairman of the Council.

The proposals have been under the consideration of a large meeting last week of the medical profession, when Mr. R. J. Johnstone, F.R.C.S., Chairman of the Local Committee, was in the chair. Strong feelings of disappointment at the constitution of the Irish Public Health Council were freely expressed. There is a fear that the new committee will be practically nominated by the Local Government Board in Dublin, and will become a mere appendage to that Board, which the medical profession holds responsible for the backward state of public health in Ireland. The following resolution was carried unanimously, and it was determined to ask the Chief Secretary to receive a deputation during his forthcoming visit to Belfast:

> That the medical profession in Belfast regret that no opportunity was found for the profession in Ireland to place their views before the Government, and that no organization representative of Irish medical opinion was consulted prior to the drafting of the Irish clauses in the Ministry of Health Bill. They object to the constitution of the Irish Public Health Council to be established under the bill, the object of which is to give advice and assistance and to make proposals to the Chief Secretary in connexion with his powers and duties under the Act—first, because there is not sufficient representation of the medical profession on the Council; and, second, because those to be appointed must be nominated by the Chief Secretary, thus denying to the medical profession the right to select their own representatives, a democratic principle conceded by the precedent established in the Central Midwives (Ireland) Act of 1918. The medical profession in Belfast believe that unless all parts of Ireland are adequately represented in this Advisory Health Council it will become a mere centralized body, largely composed of officials, and carrying little weight or influence.

CHANGE IN MODE OF APPOINTMENTS OF POOR LAW MEDICAL OFFICERS.

A sealed order has been forwarded to all the boards of guardians in Ireland amending the provisions of the general regulations and the dispensary rules so as to give power to the boards of guardians when a vacancy occurs in any dispensary district to promote, with the consent of the Local Government Board, by transference to such a district, one of the existing medical officers without going through, as heretofore, the usual formalities of an election. Beyond requiring the consent of the Local Government Board, the order does not impose any obligation on the guardians to make the promotion on the ground of the length of service and merit of their medical officials. Even if the promotion as made by the guardians did not, on its merits, receive the consent of the Local Government Board, it will remain open for the guardians, in the case of any doctor they favoured, to give effect to their wishes by appointing him through the usual procedure of an election, and thus insist on the consent of the Local Government Board.

Correspondence.

PROPHYLACTIC USE OF QUININE IN MALARIA.

SIR,—Colonel Sir Ronald Ross, K.C.B., K.C.M.G., has requested me to state my opinion for publication with regard to the value of "prophylactic quinine" as a preventive of malaria to those with no history of infection. It was his desire that I should have made a statement at the recent meeting of the British Medical Association in London during the discussion on malaria, but this was not possible owing to lack of time.

During the period I served with the 12th Corps, British Salonica Force, quinine for this purpose was given in the following dosage:

1916: 5 grains and 10 grains on two successive days in the week, the former amount being more generally employed.

1917: (*a*) 10 grains on two successive days weekly.
(*b*) 10 grains on two successive days twice weekly on Wednesday and Thursday and Saturday and Sunday.
(*c*) 10 grains daily.
(*d*) 15 grains daily.
(*e*) 20 grains daily.

The three last amounts were given temporarily to troops a few days before going into, during the period of occupation of, and for a few days after coming out of, highly malarial parts of the front trenches.

This dosage completely failed to prevent the incidence of malaria. In one battalion where the large doses of daily quinine were given there was little apparent sickness, the daily dose kept down pyrexia, and the men were thus enabled to carry on with their duties; but after some weeks it was found that these men were affected by chronic malaria as shown by the presence of the parasite in the blood, enlargement of the spleen, anaemia, etc., necessitating their admission to hospital in large numbers. It was estimated that at least 80 to 90 per cent. of units were infected.

In 1918 it was decided to give no prophylactic quinine, as the general opinion amongst the majority of medical officers was that no dose that could be tolerated had any protective value to troops exposed under campaigning conditions. Reliance was placed on other methods of malarial prophylaxis and cases treated as they occurred.

With this opinion I am in entire agreement.—I am, etc.,

G. T. RAWNSLEY,
Colonel, late D.D.M.S., 12th Corps.

Grantham, April 12th.

TALKING IN SLEEP.

SIR,—Few opportunities occur for a medical man to study talking in sleep; he sees his patient either in the waking stage, or if in a hospital the night round is made too hurriedly, and in most cases too early, to catch the talking sleeper. For the past month or so I have been myself a patient in a crowded ward, and, a poor sleeper when in good health, have lain awake night after night listening to the automatic piping of these night birds.

I have, in a rough way, been able to form some conclusion as to the periodicity of sleep talking. The maximum period is from 12 p.m. to 2 a.m., but there is a lesser period of activity within the first half-hour of "dropping off" to sleep.

The percentage of "talkers" is astonishing—60 per cent. in my ward indulged in the habit—and the type of patient ranged from the phlegmatic reserved person to the mercurial and excitable.

Often a sentence is begun clearly and distinctly, but trails off towards the end to an indistinct blur. An amusing and interesting exception to this occurred in the very bed next to mine. A patient aged 35, a quiet and reserved type of Scotchman, and by no means "pious," startled me at 1.30 a.m. by singing in a stentorian voice, that awakened everybody but himself, a complete verse of "Abide with me." The melody and words were perfect, and there was not the faintest suspicion of wavering or blurring. This, of course, is unique. I should mention that during the afternoon we had discussed the loss of the *Titanic* and the singing of the hymn "Nearer, my God, to Thee."

It is much more usual for people to swear than to sing hymns in their sleep. They will grind their teeth and mutter maledictions, after the fashion of the villain of melodrama.

Sometimes the emotion is the opposite of hatred. At midnight, a subaltern in the bed opposite, who would never have dreamed of putting the matter so crudely in his waking moments, shouted: "Sister, I'll be damned if I go to sleep unless you hold my hand." He then added something else, and—I suppose I must say, fortunately—this was blurred.

One speaker will often start another going in an adjacent bed, and in the instance mentioned of the Scotchman singing "Abide with me," the night sister, who was seated at her little table near by, assured me that it was the padre in the next bed who started him off—but this seems too "rich" to be true.

It is interesting to note that the hearing faculty shares the nocturnal activity of the speech centre, for your sleep talker will answer a question, or at the very least give clear indication that he has heard you.

There is no doubt that people give away secrets in their sleep talk; hence there is wisdom as well as wit in the line of the song, "If you talk in your sleep, don't mention my name."—I am, etc.,

E. COPLANS,
Captain R.A.M.C.(T.).

Constantinople, March 17th.

THE DISCUSSION ON WAR NEUROSES.

SIR—It is perhaps partly owing to my neglect to furnish a report of my speech at the Section of War Neuroses that I am described in to-day's JOURNAL as speaking "in favour of the use of psycho-analytical methods in the treatment of patients with war neuroses."

The words "psycho-analysis" or "psycho-analytical" were not used by me, for I know not their meaning in the mouths of other people. I said my notes show that more than half the patients of the "shell-shock" group have forgotten terrifying war experiences, and that the revival of the memory of those experiences is followed by the disappearance of the symptoms, whether tics, stammers, tremors, depression, anxiety, phobias, obsessions, fits, or terrifying dreams.

I ask the organizers of the meeting why this straightforward method of treatment, used by the five medical officers in a little-advertised hospital to which Colonel F. W. Mott is consulting physician, and by many others elsewhere, was never referred to in the course of a three hours' discussion, except for my remarks twelve minutes before the close of the meeting? The principle is the most important lesson taught us by the war.

I ask Dr. Gordon Holmes whether he places me among the "mesmerists, psychologists, and psycho-analysts" whom he attacked, and concerning whose methods he suggested there should be issued a warning?—I am, etc.,

MILLAIS CULPIN.

Epsom, April 12th.

*** We regret that in the brief account given last week of the discussion on war neuroses our reporter should have fallen into the error of stating that Captain Culpin spoke in favour of the use of psycho-analytical methods, and we recognize that the methods used by Captain Culpin cannot properly be so described. We have referred his letter to Dr. Gordon Holmes, who informs us that his remarks had no reference to Captain Culpin's methods, with the nature of which he is unacquainted.

THE NAVAL MEDICAL SERVICE.

SIR,—I was much interested in reading the letter from Acting Surgeon Commander Wills in your issue of April 5th, and I quite agree with his suggestions. It is a rare pity that a service which is otherwise so desirable should not provide better chances of keeping up one's professional knowledge. And this is more marked, as one's messmates are so very keen on their profession, and so full of the most recent ideas.

As to the "reply" by Surgeon Commander Martin, I would suggest that it is no reply at all. Surgeon Commander Wills writes of a Weekly Order, which says that the vaccine would shortly be available, and Surgeon Commander Martin writes of the vaccine when produced. As the latter would only be provided when volunteers were forthcoming, and as there is even still some difference of

opinion as to the values of various vaccines, I for one cannot see that Surgeon Commander Wills's statement was incorrect or his action wrong.—I am, etc.,

Esher, Surrey, April 13th. CECIL B. F. TIVY.

NAVAL MEDICAL DEMOBILIZATION.

SIR,—In the JOURNAL of March 29th there is the announcement that the Central Medical War Committee is being wound up on account of the approaching general demobilization of officers from the Royal Army Medical Corps. There is no mention as to whether a similar demobilization of temporary surgeons Royal Navy may be expected to take place at the same time.

As you are aware, temporary surgeons Royal Navy, on joining the service in the earlier part of the war, signed a contract to serve for five years or the duration of the war. There appears to be some doubt as to whether the Admiralty will fulfil their part of the contract on the signing of the peace terms which appears to be imminent.

I am sure the majority of my fellow officers will agree with me when I state that we are not prepared to submit to any further extension of service under any subsequent Military Service Act. We expect the Admiralty to honour the original agreement, and it cannot be too strongly impressed upon them that we joined for hostilities only, and not to help them out of their peace time difficulties, caused by the paucity of medical officers in their permanent service.

Now, apparently, as we are to be deprived of the help of the Central Medical War Committee, we will have to fall back upon "the proper service channels." This involves much delay in submitting repeated requests through unsympathetic superior officers. These applications are always endorsed with the formula, "Cannot be spared," before they are finally forwarded.

May we hope for the active sympathy of the British Medical Association in this matter? We do not wish to be driven to the method suggested by some temporary officers in securing our release—namely, that of paying a visit to the Admiralty accompanied by our solicitors.—I am, etc.,

April 6th. TEMPORARY.

MEDICAL DEMOBILIZATION.

SIR,—I have a son who volunteered for medical service on August 8th, 1914, and served in the front line from a few days after that date. He has so served through some of the hottest times of the war. He now cannot get demobilized although hundreds of conscripted men are doing so after short periods of service. This naturally appears to him to be an injustice, which he feels all the more keenly from his having sacrificed the most valuable period of his life (30 to 35), to the great detriment of his professional career.

I know some, and there are probably many, who are suffering from the same apparent injustice, but before appealing to the more public means of obtaining redress, I hope that you, Sir, will make some comment on what appears to be a matter affecting the welfare of the profession.—I am, etc.,

April 14th. Z.

*** Our comment is that this was exactly the kind of thing we supposed would happen when the Secretary of State for War scrapped the scheme for medical demobilization drawn up by the Central Medical War Committee.

THE PRICE OF OPIUM AND COCAINE.

SIR,—In my opinion it is time that steps were taken to put an end to the extraordinary and unjustifiable prices of opium and its preparations and of cocaine. Apparently because these drugs are abused by a few moral degenerates the whole world of legitimate users must suffer. Cocaine particularly is now practically unusable in ordinary practice. There are, of course, substitutes, but they are not quite the same. The wholesale price of this in South Africa was, before the war, 15s. per ounce. It rose steadily to about 35s., and now, after peace, it has suddenly jumped to £5. The preparations of opium, so valuable in many other ways than as mere pain soothers, are equally expensive. This is not as it should be. It is surely not impossible to provide for the millions being properly supplied while preventing a few hundreds from abuse.

I hope some committee of the Association will see its way to take the matter up with the Government in order to provide, for legitimate purposes, a proper supply at reasonable prices.—I am, etc.,

Bethulie, South Africa, Feb. 26th. JOHN A. GRAHAM, M.B.

FEE FOR NOTIFICATION OF INFECTIOUS DISEASES.

SIR,—In your issue of April 12th you say that you are authorized to state that Dr. Addison has promised to receive a deputation on this question on the earliest possible date after Easter.

Many questions arise in every one's mind when a deputation is talked about. First, who and of what standing in the profession or the Association will be asked to attend? Our work makes us self-reliant, and I think for this time members of the profession who are general practitioners should be asked to express their views. Secondly, what is to be the line of attack? Has the Association no other idea than a frontal attack, which Dr. Addison has become accustomed to, and, in his usual diplomatic manner, dismisses with a wave of his hand as he shows you downstairs?

To me it seems that the time is now ripe for a flank attack. The whole profession, members and non-members of the Association, is willing to entertain any idea which would not only restore to us our former remuneration but also might lead to a substantial advance to help to meet the increased cost of living. I suggest that a postal vote be taken of the whole profession. For if a deputation went forward with a bag containing 15,000 affirmative signatures stating that unless our petition is granted every one will refuse to sign any more notification certificates, Dr. Addison will take only three minutes in considering how to reverse an outrageous enactment that has existed too long.—I am, etc.,

Glasgow, April 12th. A. KENNEDY GLEN.

MEDICAL RECONSTRUCTION.

SIR,—I was pleased to see Dr. Rees's letter in the JOURNAL of March 29th. I have always been a loyal supporter of the British Medical Association, and intend to continue so, but at the same time I am strongly of opinion that the only way we can hold our own as medical men is by a strongly organized union such as the Medico-Political Union.—I am, etc.,

P. HUGHES DUDLEY, L.R.C.S., L.R.C.P.

Caxton, Cambs, April 1st.

THE PLIGHT OF THE YOUNG MARRIED DOCTOR.

SIR,—Does "W. B.-S." (p. 428) ever look at your advertisement columns? Numbers of young doctors are required as partners in industrial neighbourhoods, and they are offered partnerships on easy terms of purchase. I have myself interviewed some, but one did not like the district, another the house, another did not want midwifery cases, another wished to live outside the town and come in daily—just what I want to do myself! In fact, apparently, none of them wanted work.—I am, etc.,

April 7th. SENEX.

THE Goncourt prize for 1918 has been awarded to Dr. Georges Duhamel for his work entitled *Civilisation*. He is also the author of *La Vie des Martyrs*, a record of his experience as an army medical officer, a work which has won for him a considerable literary reputation.

THE work of the American Public Health Service in controlling malaria in and about cantonments in the United States has made the disease of comparatively little consequence in the war. In freeing various areas from mosquitos, 2,500 miles of ditches have been dug and 1,200 square miles of swamps drained. Seven hundred technical experts and 3,000 labourers were employed in the campaign in the autumn of 1918. This number has been reduced to 150 experts and 600 labourers. Most of these men will enter the employment of cities and towns in which they worked for the Government. Besides safeguarding areas exclusively under military authority, it has been found necessary to control the civilian areas surrounding camps.

COLONEL H. M. W. GRAY, C.B., C.M.G.

A DINNER was given to Colonel H. M. W. Gray, C.B., C.M.G., at the Criterion Restaurant, London, on Saturday, April 12th, by some of the surgeons who had worked under him in France. At the conclusion of the dinner Colonel Gray was presented with a large silver bowl as a permanent memento of the admiration with which his work in France was regarded by all who had served under him in a surgical capacity. Reference was made by various speakers to the number of new developments in the treatment of war wounds for which Colonel Gray had been responsible. When great numbers of men are working together in a common cause, and are contributing their quota to the common fund of knowledge, it is often difficult to apportion the praise for a particular advance to any one individual. However, in the mind of all those present, Colonel Gray stood out conspicuously as a pioneer of improved methods. Even where methods that he had advocated were superseded by newer ones the foundations of the new developments often rested on the work that Colonel Gray had originally done. The success of the salt-pack method advocated in 1915 by Colonel Gray depended on the careful surgical preparation of the wound, in other words on the excision of all damaged tissue; and how much of the improvement later achieved in the treatment of war wounds had not resulted from the recognition of this truth? Emphasis was also laid by various speakers on the excellence of the relations that existed between Colonel Gray and those who had been privileged to work under him.

In replying to the toast Colonel Gray characteristically gave credit for much that he had been able to do in France to the initiative and ability of those working under him. He said that he would look back on his four years in France as one of the happiest periods of his life, and that these pleasant memories would be in great part due to the cordial relations that had existed between himself and the surgeons working at the various hospitals and casualty clearing stations in his area.

The officers present were Lieut.-Colonel Scrimger, V.C., C.A.M.C.; Majors Tabuteau, D.S.O., J. Austin, Gordon Taylor, J. Anderson, D.S.O., J. E. H. Roberts, W. Mumford, O.B.E., Hathaway, Ross Millar, Birkbeck, Hamilton, Lockwood, D.S.O., M.C., and Horton; Captains R. Laurie, O.B.E., Milligan, and K. M. Walker. Several others who wished to attend were unavoidably detained.

Universities and Colleges.

UNIVERSITY OF DURHAM.

AT the Convocation held on March 29th the following degrees were conferred:

M.D. (*Essay*).—J. H. Barclay. *For Practitioners of Fifteen Years' Standing*: G. Lucas.
M.S.—T. A. Hindmarsh.
M.B. AND B.S.—D. G. P. Bell, J. M. Brydson, Iris M. Cheeseright, Rev. S. Foskett, P. Hickey, J. P. Higham, H. W. Walther.
D.P.H.—J. M. G. Ewing.

UNIVERSITY OF GLASGOW.

AT a graduation ceremony on April 4th the following medical degrees were conferred:

M.B., CH.B.—*J. W. Peden, *J. Donald, †J. Hewitt, †Georgina Murdoch, †Mary T. L. Clark, †J. M. Ritchie, A. S. Bisset, A. Black, J. Bradford, Charlotte A. Douglas, J. C. Dow, Margaret H. Grant, J. A. Hamilton, Helen Hogg, S. H. W. Kamesasse, R. E. Kerr, A. C. Lindsay, R. T. M'Gibbon, W. S. M'Intyre, G. M. Millar, A. S. Miller, M. S. Molema, W. B. Moore, J. A. O'Connor, J. Pollock, Jane E. Shortt, Muriel A. Stowe, H. D. Wallace, R. K. Watt.

* With honours. † With commendation.

The following candidates have been approved at the examinations indicated:

M.B., CH.B. (*M., Materia Medica and Therapeutics; P., Pathology*).—J. L. Anderson (M., P.), J. Baird (M., P.), A. Barr (M., P.), B. Barrowman (M., P.), M. Brown (M., P.), A. Campbell (M., P.), J. G. Campbell (M., P.), R. K. Duguid (P.), R. Fletcher (P.), J. Frew (P.), F. D. Gillespie (M.), C. Glen (M.), C. N. Gordon (M.), A. Gray (P.), T. O. Howie (M.), H. W. Howieson (M.), P. Hutchison (M.), T. T. Hutchison (M.), W. M. Knox (P.), B. Levine (M., P.), A. L. M'Adam (M.), A. M. M'Clure (M., P.), W. R. M'Crae (M.), J. Macdonald (M., P.), E. Macfarlane (P.), J. Macfarlane (M.), A. M'C. Macintosh (M., P.), D. L. Macintyre (M., P.), R. M'I. M'Kean (M., P.), D. Mackenzie (P.), K. Mackenzie (M.), H. H. MacKinnon (M.), J. P. M'Millan (M., P.), P. MacMurray (M., P.), J. C. M'Naught (M.), M. F. G. Main (P.), *A. Markson (M., P.), N. M'E. Montgomery (M., P.), J. B. O'Neil (P.), G. Paterson (M., P.), J. Paterson (M., P.), W. J. Payne (M., P.), J. Prentice (M.), D. Reid (P.), J. Reid (M., P.), R. S. Reid (P.), I. C. Robertson, (M.), I. MacR. Sandilands (M.), H. E. Seller (M., P.), J. Sillars (P.), A. W. Sinclair (P.), *L. Sive (M., P.), J. Smart (M.), *A. G. Smith (M., P.), F. C. Speechly (P.), P. M. Speed (P.), J. Stirling (M., P.), H. A. Summers (P.), D. F. S. Thomson (P.), R. J. Watson (M.), J. D. Whiteford (M.), J. D. Williamson (P.), J. Young (M.), Mary Baird (M., P.), Amy M. Fleming (M.), Dorothy J. L. Gallie (M.), Marion P. Hogg (M.), Marie J. M'Naught (M., P.), Marjorie Mitchell (P.), Isobel Reid (P.), Christina S. Stoddart (M.), Lilian J. T. White (P.). *Medical Jurisprudence* (New Regulations): R. R. S. Bowker, J. Caddies, T. Fletcher, C. M. Forbes, J. F. Hamilton, R. G. Howat, D. W. Humble, Chung Un Lee, P. M'Donald, F. M'Vean, R. Mair, J. M'K. Maxton, J. Orr, J. Shaw, J. Smart, P. M. Speed, D. M'D. Sproull, J. Stewart, Mabel M. Maclean, Helen L. Ralston, Kathleen Eleanor Hyde Rutherford. (Old Regulations): D. M. Macmillan, R. S. Reid, D. F. S. Thomson.

* Passed with distinction.

OFFICERS' TRAINING CORPS.

In view of the services of the University of Glasgow Officers Training Corps during the war, and of the importance of the Glasgow Medical School, the War Office has intimated to the Vice-Chancellor that the formation of a medical unit of the corps has been sanctioned by the military authorities, and that its formation may now be proceeded with.

SCOTTISH UNIVERSITIES ENTRANCE BOARD.

THE Entrance Board intimates that it proposes to issue for the consideration of the universities, under Section VII of General Ordinance No. 3 (Regulations as to admission to the Scottish Universities for purposes of graduation) a general regulation providing that the standard of preliminary education required for admission to the Faculty of Medicine shall be assimilated to that for admission to the Faculties of Arts or Science.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., PART I.—*Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene, Pathology*: *B. H. C. Allen, *A. J. L. Snijman, *J. A. Smith, *F. Z. van der Merwe, *H. V. Exner, *Janie Millar Cummins, I. Levy, E. H. Frazer, T. C. Coetzee, L. Wigoder, Moira M. Brown, E. W. S. Deale, J. R. Waugh, T. Madill. *Pathology—completing examination*: P. I. Levitt, F. W. Robertson. *Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene*: P. J. Healy.

PART II.—*Medicine*: *A. R. Aidin, F. J. Smith, A. H. Thompson, Rita Henry, Gertrude Rice, A. J. Vorster, R. Resneskov, J. J. G. de Kock, J. E. Hill, A. L. Wilson, J. H. Coolican, F. J. G. Battersby, P. Casey. *Surgery*: C. D. Brink, J. C. J. Callanan, R. B. N. Smartt, A. R. Aidin, V. G. Walker, A. L. Wilson, J. J. G. de Kock, R. Resneskov, J. T. Mynhardt, Mary C. Sheppard, H. B. van der Merwe, F. J. G. Battersby, G. F. Keatinge. *Midwifery*: *R. Counihan, *C. J. de V. Shortt, J. J. G. de Kock, V. G. Walker, R. Resneskov, J. F. Sheppard, A. I. Steyn, A. Blagoff, A. J. Vorster, Jessie Gilbert.

D.P.H., PART I (*Bacteriology, Pathology, Chemistry, Physics, and Meteorology*).—J. W. Scharff, R. Condy.

PART II (*Sanitary Engineering, Vital Statistics and Public Health, Hygiene and Epidemiology*).—H. S. Sugars, J. W. Scharff.

* High marks.

QUEEN'S UNIVERSITY, BELFAST.

AT the spring graduation ceremony, on March 25th, the following degrees and diploma were conferred:

M.B., B.CH., B.A.O.—*G. D. F. M'Fadden, *H. Poston, J. Barron, T. G. Campbell, Jean Clarke, T. Dickey, C. W. A. Emery, J. W. Gaston, M. G. Kierans.
D.P.H.—S. Miller.

* With second class honours.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Re-election of President.

AN ordinary comitia of the Royal College of Physicians of London was held on April 14th, at 5 p.m., when the President, Dr. Norman Moore, delivered the customary annual address, in which he mentioned the various honours and decorations conferred upon Fellows, Members, and Licentiates during the past year, and reviewed the work done by various committees of the College, including the Committee of Reference and the Joint Committee on the Ministry of Health. He pointed out that the College, at its foundation 401 years ago, consisted of 6 Fellows, whereas there were now 368 Fellows, 492 Members, and 13,645 Licentiates on the Roll. He then read brief biographies of the 18 Fellows who had died during the year—namely, Dr. Alfred Ellington Stansfeld, Sir Herman Weber, Dr. Edward Liveing, Dr. Frederick Thomas Roberts, Dr. Richard Grainger Hebb, Dr. George Ogilvie, Dr. Robert Liveing, Dr. Edward Thomas Wilson, Dr. William Vicary Snow, Sir James Sawyer, Dr. Robert Saundby, Dr. Alfred Henry Carter, Dr. John Michell Clarke, Dr. William Barnett Warrington, Dr. William Allan Sturge, M.V.O., Dr. Thomas Buzzard, Dr. Frederick Eustace Batten, and Dr. Leonard George Guthrie. On the motion of the Treasurer, the President was asked to allow his address to be printed. Dr. Norman Moore was then re-elected President for the ensuing year.

The Dogs' Bill.

The following resolution, proposed by Sir Wilmot Herringham and seconded by Sir William Hale White, was carried unanimously:

The Royal College of Physicians of London, in full meeting, hereby records its opinion that the passing into law of the Dogs' Protection Bill now before the House of Commons will greatly retard the progress of our knowledge with regard to the prevention and treatment of disease.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY council was held on April 10th.

Jacksonian Prize.—This prize was awarded to Mr. J. A. Cairns Forsyth for his dissertation on "Injuries and diseases of the pancreas and their surgical treatment." The subject for the year 1920 is "The results and treatment of gunshot injuries of the blood vessels."

Triennial Prize.—The subject chosen for the next prize is "The anatomy, morphology, and age changes of cervical ribs in men, including a description of the associated ligaments, muscles, blood vessels, and nerves."

Election to the Fellowship.—The following two members of twenty years' standing were elected Fellows: Professor J. G. Adami, F.R.S., Colonel C.A.M.C., Sir T. H. J. C. Goodwin, K.C.B., C.M.G., D.S.O., Director-General Army Medical Service.

University of London.—Sir Charles Ballance was elected as the Representative of the College on the Senate of the University of Leeds in the vacancy occasioned by the retirement of Sir Alfred Pearce Gould, K.C.V.O.

Postponed Hunterian Lecture.—Professor T. B. Layton's postponed lecture will be given at 5 p.m. on Tuesday, May 6th, on "Surgical aspects of the collection and transport of wounded." It will be illustrated by photographs taken in Palestine.

American Medical Association.—A letter was read of April 4th from the Local Government Board stating that delegates from the medical profession of this country are invited to attend the annual session of the American Medical Association in Atlantic City, New Jersey, U.S.A., from June 9th to 13th, 1919, and the convention of the Ontario Medical Association at Toronto from May 28th to 30th, 1919. Mr. Ernest W. Hey Groves was appointed the College delegate.

Historical Lecture in Anatomy and Surgery.—A letter was read from the Clerk to the Barbers' Company reporting that at a recent court of the company it was resolved that the company offer the annual sum of £10 10s. for five years, for the purpose of instituting at the Royal College of Surgeons an historical lecture in anatomy or surgery, to be called the Thomas Vicary lecture, the appointment of the lecturer being in the gift of the College. The offer was accepted.

Vacancy on the Court of Examiners.—A vacancy occasioned by the retirement of Sir Charles Ballance will be filled up at the ordinary council on May 8th.

Sir James Paget.—The thanks of the council were given to Mr. Stephen Paget for presenting to the College the microscope used by his father, Sir James Paget.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates have passed the examination of the school at the termination of the fifty-ninth session (January-April, 1919):

*M. F. Sorour, *H. J. Smyly, E. St. J. Seelly, H. U. Leembruggen, V. B. Kyle, J. B. Bostick.

* With distinction.

Obituary.

ALFRED GEORGE BATEMAN, M.B., C.M.ABERD.,

General Secretary of the Medical Defence Union.

THROUGH the death of Dr. A. G. Bateman, General Secretary of the Medical Defence Union, the medical profession has lost one of its most notable members. Probably no one was better acquainted with the customs, conventions, and traditions of medical practice or with the rights, liberties, privileges, duties, and ethical obligations of medical men in their relations with each other and with the public. As chief executive officer of the Union, in the intervals of meetings of the Council, he was, during his long period of office, called upon to advise large numbers of medical men on innumerable troubles and difficulties arising out of medical practice. His advice was always sound and useful, and almost invariably approved and confirmed by the Council.

Dr. Bateman's decisions were always prompt and always decided, but never hasty or unconsidered. They were the combined result of quick mental processes and manifold opportunities. In the course of his official experience he had accumulated a large fund of apposite knowledge which served as a safe and sure guide to his judgement. He had, moreover, a remarkable capacity for taking pains. At all times, whenever a doubt or difficulty arose, he never hesitated to reconsider a question. In the end he was always able to support his considered opinion by appeals to the latest and best authorities, whether personal or literary. His acquaintance with the few "black sheep" of the profession, with quacks, tricksters, and unqualified practitioners generally, was indeed extensive and peculiar. He seemed to have an instinct for finding out offenders and a genius for bringing them to justice. He spent months, and sometimes even years, in watching or tracking suspected persons, but he did not strike or invoke the help of the courts of justice or the higher medical tribunals until he was in possession of complete legal proof of guiltiness. The care and accuracy with which he prepared his cases gained him the confidence of the Public Prosecutor and other public and medical authorities. If some of the cases which he was instrumental in bringing to light were published, they would seem to belong to the realm of fiction and romance rather than to the ordinary world of sober fact.

For many years Dr. Bateman was in poor health, and suffered from severe attacks of asthma that would have incapacitated a man of less physical and moral courage. In spite of ill health he devoted all his talents to the careful and painstaking discharge of his duties. His sympathy was quick to respond to cases of hardship and injustice, but he had little toleration for the obstinate and wrong-headed. He did not hesitate to speak his thoughts freely to those whom he believed to be guilty of wilful wrong-doing. He did not suffer fools gladly. On the other hand, he never spared himself in the endeavour to strengthen the weak, to protect the innocent, and to guide the erring into the right path.

JOHN TWEEDY.

We are indebted to Mr. W. E. HEMPSON, solicitor to the Union and to the British Medical Association, for the following tribute of appreciation and regard:

A. G. Bateman was of strong personality—a many-sided and much gifted man, and a keen judge of character. I was first brought in touch with him about twenty-seven years ago at a critical period in the history of the Medical Defence Union, and from that time onward to the date of his death we have worked together in the closest harmony and good fellowship. His loss to the profession is not to be estimated. His life was whole-heartedly devoted to his work, to the entire exclusion of every other thought or consideration, and there are many who will be ready to admit that, due to his wise prudence and judicious pilotage through dangerous shoals, professional disaster to them has been averted. Bateman was a veritable glutton for work, tenacious of purpose and impatient of compromise where the professional reputation of a medical man was concerned, and possessing withal a far-sighted appreciation of relevant and essential attributes. His abilities and shrewd detective instincts were seen to best advantage when engaged in tracing out the past history of an unqualified person or a suspected impersonator. In any matter of this nature which he took in hand success was assured, and the records of our criminal courts afford eloquent testimony to this end.

It is due to his energies that the Medical Defence Union has been brought to the eminently successful position which it occupies to-day. During his thirty-five years' active connexion with that body he has been instrumental in raising it from a humble starting-point to the high level which it has now attained, both in so far as membership and good work are concerned. Moreover, the services which he and Mrs. Bateman rendered during the earlier years of the war in aid of the Belgian refugees recently received well merited and distinguished recognition at the hands of King Albert. Few men have been privileged to accomplish as much in a lifetime, and Bateman's courageous fortitude in combating infirmity of health during the later years of his life commanded the deepest admiration and respect. I write of him as I knew him—a staunch friend and loyal colleague—and with a true sense of the loss which his death means to me.

BY the death of ROWLAND POLLOCK on March 7th, after a brief illness, from pneumonia, the inhabitants of Acton, especially the poor, have sustained a grievous loss. He was the youngest son of George Annesley Pollock, a well known sportsman and landowner of County Meath. He received his medical education at Dublin, where he obtained the diplomas of L.R.C.P. and S.I. in 1882. He settled first at Tunbridge Wells, and moved to Mill Hill Park, Acton, in 1896, where he practised up to the time of his death. Rowland Pollock's great aim was to do his work thoroughly and conscientiously, and with this ideal he early made himself a perpetual post-graduate at the West London Hospital. He was in great request at the Acton Hospital in all cases of emergency, and never refused a call to a poor patient day or night. Rowland

Pollock endeared himself to every one with whom he came in contact by his genial and sympathetic personality and his courteous and charming manner. The deep sympathy shown by all classes of the community at his funeral testified to the high respect in which he was held. He married in June, 1887, the youngest daughter of the late John Gibson, B.D., vicar of Brent-with-Furneaux, Pelham, Herts, and leaves a widow and invalid son.

DR. WALTER J. CLARKE died on March 19th at his residence, Gravelly Hill, Birmingham. He was educated at the Birmingham Medical School and at St. Bartholomew's Hospital, London. After taking the M.R.C.S. and L.R.C.P. diplomas he acted as house-surgeon to the Queen's Hospital, Birmingham, and subsequently started practice at Gravelly Hill, where he initiated and delivered courses of lectures in St. John Ambulance work with great success at a very early stage of that movement. He developed his practice on scientific lines, acquiring an excellent installation of *x*-ray and high frequency apparatus, superior to that of many of the provincial hospitals; in this direction he was one of the early pioneers in local advance. He was gazetted Captain R.A.M.C.(T.) *à la suite*, but resigned his commission before the war on account of ill health. He was subsequently appointed medical officer to the V.A.D. Hospital, Norlands, Erdington, and acted in that capacity until some weeks before his death. He leaves a widow and two sons, the elder of whom, Captain L. Beale Clarke, is serving in Salonica as president of a medical classifying board.

DR. HENRY AMBROSE GRUNDY BROOKE, the well known dermatologist, who died recently at his residence in Manchester, was born in 1854 at St. Helens, Lancashire, where his father practised as an architect. He received his professional education at Owens College, Manchester, and Guy's Hospital, graduating B.A.Lond. in 1874, and M.B. in 1880, in which year he obtained the M.R.C.S. diploma. He studied also in Vienna and Paris, and sat under Kaposi, Besnier, and Unna. In 1883, after serving as house-physician and house-surgeon to the Manchester Royal Infirmary, he began practice as a dermatologist. He founded the Manchester and Salford Hospital for Skin Diseases, which is now one of the largest and most completely equipped hospitals of its kind in Great Britain, and continued to hold office as physician until the time of his death. Dr. Brooke was a member of the Dermatological Society of London, and a corresponding member of the Dermatological Society of Paris. He was the author of numerous articles on skin affections, and was founder and co-editor with Sir Malcolm Morris of the *British Journal of Dermatology*.

COLONEL EDMUND BARON HARTLEY, V.C., C.M.G., Cape Colony Medical Corps (retired), died of heart failure following influenza on March 20th, aged 71. He was the eldest son of Dr. Edmund Hartley of Ivybridge, Devon, where he was born on May 6th, 1847. He served as a clerk in His Majesty's Inland Revenue from 1867 to 1869, after which he entered on the study of medicine at St. George's Hospital, taking the diploma of M.R.C.S. in 1874 and that of L.R.C.P.Edin. in 1880. From 1874 to 1877 he was district surgeon in Basutoland. In 1877 he joined the Cape Colony forces as surgeon to the Cape Mounted Rifles; in 1878 he was appointed principal medical officer of these forces, and subsequently colonel in command of the Cape Medical Corps. He served in the Zulu war of 1877–79, including the Galeka, Gaisa, Morosi, Tembu, and Basuto campaigns, gaining the V.C., medal, and clasps; in the Bechuanaland expedition of 1897, when he was wounded; and in the South African war, 1900–2, receiving the medal with five clasps and the C.M.G. He was decorated with the Victoria Cross for valour in rescuing and bringing in wounded men under a heavy fire at the unsuccessful attack on Morosi's Mountain on June 5th, 1879.

COLONEL ARTHUR OWEN EVANS, Indian Medical Service (retired), died at Lyndhurst, Hampshire, on February 22nd, aged 59. He was born on July 30th, 1859, educated at St. George's Hospital, and took the diplomas of M.R.C.S. in 1880 and L.R.C.P.Lond. in 1881. After acting as house-surgeon of Dewsbury Hospital he entered the I.M.S. as surgeon on March 31st, 1883. After four years' military duty he was posted to civil employ in Burma, where he was for many years civil surgeon of Moulmein, and after his promotion to administrative rank, inspector-general of civil hospitals. He served in the Burma war in 1885-7, and received the medal.

DR. HENRI HENROT, mayor of Rheims, who played a heroic part during the war, died suddenly at the Ministry of the Interior, Paris, during a sitting of the Superior Council of Hygiene. He had just been elected vice-president of that body. He was a corresponding member of the Académie de Médecine. He was 85 years of age.

The Services.

CASUALTIES.

ARMY.

Wounded.

Lieutenant S. L. Bhandari, I.M.S. (temporary).

Missing.

Major F. M. Taylor, R.A.M.C.(S.R.).

DEATHS OF SONS OF MEDICAL MEN.

Peddie, Alexander William Ponsonby, Captain Lincoln Regiment, eldest son of Dr. H. A. Peddie of Edinburgh, reported wounded and missing on September 14th, 1914, now presumed killed on that date.

HONOURS.

COLONEL (temporary Major-General) GEORGE B. STANISTREET, C.B., C.M.G., has been appointed a Commander of the Order of the Crown of Italy in recognition of distinguished services rendered during the course of the campaign.

The King of the Belgians has conferred the distinction of Grand Officier—Ordre de la Couronne and the Croix de Guerre medal upon Major-General (temporary Lieut.-General) Sir Charles Burtchaell, K.C.B., C.M.G., in recognition of distinguished services rendered during the campaign.

Lieut.-Colonel Alan Frankland Jolley, 9th Australian Field Ambulance, A.A.M.C., and Major John V. H. Guest, 8th Field Ambulance, A.A.M.C., have been presented by the King of the Belgians with the Croix de Guerre in recognition of distinguished services rendered during the campaign.

The King of Hellenes has conferred the Medal for Military Merit upon Surgeon Sublieutenant Alexander L. Brough, R.N.V.R., for distinguished services rendered during the war.

DEMOBILIZATION OF SCOTTISH DOCTORS.

WITH reference to the announcement in the Scottish press on March 26th to the effect that the Ministry of National Service, as from March 31st, discontinued its functions in connexion with the demobilization of all medical officers serving with His Majesty's forces, we are asked to intimate that the advisory relations which existed between the War Office, the Admiralty, and the Scottish Medical Service Emergency Committee prior to the establishment of the Ministry of National Service have been resumed as from that date. All applications for the release of Scottish doctors should, as formerly, be made to the Secretary of the Committee, Royal College of Physicians, 9, Queen Street, Edinburgh.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

AT the quarterly committee meeting of the funds held on April 4th three grants were made to cases in the Benevolent Branch for officers, and two grants to cases in the Relief Branch for the rank and file. These funds are for the relief of widows and orphans of commissioned officers and N.C.O.'s and men of the rank and file of the R.A.M.C. Special Reserve, Territorial Force, and New Armies, and also for the relief of the children of those who have been so severely damaged in the present war that they need help for the education of children. Requests for relief should be addressed to the honorary secretary, Sir William Hale White, at the offices of the funds, at 11, Chandos Street, Cavendish Square, W.1.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Executive Committee of the War Emergency Fund of the Royal Medical Benevolent Fund, held on April 4th, when Lieut.-Colonel Sir Alfred Pearce Gould was in the chair, several applications for assistance were received, and grants amounting to £1,710 were made. Applications for assistance, marked "Confidential," should be addressed to the Honorary Secretary of the Fund, 11, Chandos Street, Cavendish Square, W.1. About £22,000 has been received in support of the fund, but it is believed that a further £8,000 will be required. Subscriptions should be sent to the honorary treasurer at the above address.

Medical News.

AT the annual meeting of the Society for the Study of Inebriety Sir Alfred Pearce Gould, K.C.V.O., F.R.C.S., was elected president in succession to Sir William Collins, M.D.

DR. LIVINGSTON FARRAND, president of the University of Colorado, has been appointed chairman of the Central Committee of the American Red Cross in succession to Mr. William H. Taft.

THE firm of Mayer and Meltzer will in future be known as Mayer and Phelps. The business will be conducted at 59–61, New Cavendish Street, W.

THE Sultan of Egypt has conferred the insignia of the Order of the Nile upon the following members of the medical profession in recognition of valuable services rendered:—*Second Class:* Dr. A. Granville, C.M.G. *Third Class:* Dr. J. E. Creswell, M.B.E. *Fourth Class:* Dr. E. V. Oulton.

AT the request of the Middlesex War Pensions Local Committee Lieut.-Colonel A. F. Hurst, R.A.M.C., M.D., officer in charge of the Seale Hayne Military Hospital, will give a lecture on Monday, April 28th, at the Central Hall, Westminster, on psychotherapy in diseases and injuries resulting from the war. The Committee invites medical practitioners in Middlesex to attend the lecture.

PROFESSOR ARTHUR KEITH, Conservator of the Museum of the Royal College of Surgeons of England, will give a demonstration once a week for three weeks, beginning on Friday, April 25th, to medical students and practitioners, and to first-aid and ambulance students. The demonstrations will be given at 5 p.m. on each day, and will deal with gunshot injuries of the skull, bones, and joints, and injuries to the pelvis and pelvic viscera.

COLONEL ALBERT CARLESS, M.S., F.R.C.S., has accepted the invitation of the Council of the Barnardo Homes to assume the post of Medical Director to the Homes from October next. Colonel Carless is resigning the professorship of surgery at King's College, and the post of surgeon to King's College Hospital, in order to give his whole time to the organization of the medical and hygienic work of his new office.

A COMMITTEE has been appointed by the Home Secretary to inquire into the organization of the medical service provided for the Metropolitan Police Force, and to report as to the desirability of any alteration of the present system. The chairman is Sir Hamar Greenwood, Bt., M.P., and the other members are Sir W. Watson Cheyne, Bt., M.P., Major-General Cuthbert S. Wallace, C.B., Major H. Barnes, M.P., Mr. John F. Moylan, C.B.E., and Dr. John Sinclair. The secretary is Mr. F. C. Johnson, to whom communications should be addressed at the Home Office, Whitehall.

THE Society of Public Analysts, at its meeting on April 2nd, received a note by Helen Masters, B.Sc., stating that casseroles of various descriptions, particularly some said to be of French make, were found to yield considerable proportions of lead on treatment with 4 per cent. acetic acid and with dilute solutions of other acids such as would be present in certain cooking operations. The soluble lead was not all extracted by one operation, but after two or three treatments, each subsequent treatment appeared to yield a fairly constant quantity.

THE British Scientific Products Exhibition, arranged by the British Science Guild, will be open in the Central Hall, Westminster, from July 3rd to August 5th. Its objects are to illustrate recent progress in British science and invention, and to help the establishment and development of new British industries. There will be twelve sections, among them one for medicine and surgery, including bacteriology and *x*-ray apparatus. Another section will be for chemistry, in which products, plant, laboratory ware and apparatus will be shown. Other sections are those for fuels, electrical appliances, and physics.

IN the JOURNAL of January 11th, 1919, p. 61, a brief report was given of the conviction at the Thames Police Court of Marcus Woolf Cohen, M.B., who with two other persons was charged with being concerned in "doping" a Russian subject to make him unfit for military service. Dr. Cohen was alleged to have given a false medical certificate preparatory to the commission of the offence. He denied the charge, and was defended by Sir E. Marshall Hall. He was found guilty and sentenced to six months' imprisonment, and ordered to pay a fine of £100 and £20 costs, or in default of payment fifty-one days' further imprisonment. At the London Sessions on April 8th Dr. Cohen appealed against his conviction. The appeal, which was conducted by the London and Counties Medical Protection Society, was allowed, and the conviction and fine quashed.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

QUERIES AND ANSWERS.

S. J. W. asks for advice as to treatment of incontinence of urine in a lady, coming on after confinement (five years ago). There is a slight cystocele.

LETTERS, NOTES, ETC.

THE RUTHERFORD CASE.

THE trial of Lieut.-Colonel N. C. Rutherford, D.S.O., R.A.M.C., on the charge of murdering Major Seton on January 13th, ended in the verdict returned by the jury, after a few minutes' consideration, that Colonel Rutherford was guilty but insane. The judge, in ordering Colonel Rutherford to be detained during His Majesty's pleasure, said he entirely agreed with the verdict.

The effect of the verdict, guilty but insane, as we understand it, is that all charges of criminality are wiped out of the record—an important consideration in the event of ultimate recovery from the mental affection.

IODINE IN INFLUENZA.

DR. A. G. NEWELL, M.D., D.P.H. (London, N.8), writes: Your reference to Dr. Andrés Sobrino's use of iodine in the treatment and prevention of influenza, in the BRITISH MEDICAL JOURNAL of April 5th, and Dr. Thomas's reference to its use (but he does not say he has used it in influenza), is of interest to me. I tried it in influenza from the end of October, 1918, and I have treated over 100 cases of all ages with it. My plan is one drachm of the tinctura iodi (*B.P.*) in six ounces of water. A tablespoonful three or four times a day for adults. For children over 12 two teaspoonfuls; under this, one teaspoonful, and infants half a teaspoonful. None of the cases seen *early* got pneumonia. Some cases of patchy pneumonia and bronchitis require in addition an expectorant mixture. The temperature in all uncomplicated cases dropped rapidly from 102° to 99°. In all cases I give calomel at the outset. Cases of double pneumonia with high temperature (104° or 105°) did not react, and required other measures, but I think one can safely say all these are cases which have been going about with a modified infection, and one does not get them early enough. I have elsewhere shown that I have proved its value in small-pox and cholera, and in tonsillitis it is useful internally and externally.

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